The Project Method of Teaching

DRAWING FOR LINE ENGRAVING

PART 1

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DRAWING FOR LINE ENGRAVING

(PART 1)

INTRODUCTION

PURPOSE

1. Preliminary Training for Commercial Illustrating.—Any one who applies his artistic training to some practical line of art work will find that such a start is usually made in the field of *commercial illustrating*. This general term is applied to all illustrating work of an advertising or mercantile nature that assists in the advertising and sale of goods, as distinguished from the purely pictorial character of newspaper, magazine, and book illustrations. The special art-department and drafting-room practices peculiar to commercial illustrating, and which will be discussed in this and subsequent Sections, are essential; but their full value cannot be utilized unless the student has been well trained in drawing and rendering, which have constituted the preliminary training given up to this point.

2. Scope and Method of Training.—The young artist must have a general idea of the nature of commercial illustrations, the methods of preparing the drawings employed, and especially of the *processes of reproduction*, or the making of metal printing plates from drawings. He must become familiar with the drawing and designing of the various classes of commercial illustrations, and must practice making original drawings

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for advertisements, catalog cuts, decorative lettering, cover designs, air-brush work, etc. It will be necessary, therefore, to devote a number of Sections to the presentation of this training.

The purpose here is to show the workings of commercial art departments, and particularly to train the student to make the pen-and-ink drawings used in the line process of reproduction.

The next Section will continue the discussion of the methods of drawing for line reproduction, and, particularly, special commercial techniques and practices, the making of drawings in stipple, on Ross papers, and with the aid of shading films, as well as other miscellaneous methods of preparing practical commercial drawings. Following, will be Sections devoted to decorative lettering and cover designing, retouching for halftones, and commercial illustrating in halftone and color.

3. **Training for Practical Work.**—For commercial illustrating, the artistic training in drawing and rendering, and the technical training in making drawings for definite process work or definite purposes, will be insufficient. They must be supplemented by actual practice in technique and especially in making such original drawings as would be required of the beginner in the photoengraving or advertising-agency art department. This practical training will consist in the preparation by the student of practical original drawings for definite processes and specific commercial uses, and their submission to the Schools for comments and helpful advice.

COMMERCIAL ART DEPARTMENTS

ADVERTISING AGENCIES AND PHOTOENGRAVERS

4. **Function of Art Departments.**—Drawings and illustrations for commercial purposes are prepared by the art departments of advertising agencies, photoengraving concerns, private illustrating companies or firms, and also by free-lance illustrators. The main purpose of the advertising agency is

to plan and direct advertising campaigns for manufacturers of and dealers in various kinds of merchandise, to solicit their advertising, prepare copy for the catalogs, booklets, circulars, magazine advertisements, showcards, or posters to be used, and secure the necessary drawings and reproductions. Some advertising agencies maintain an illustrating department, while others depend on outside artists or photoengravers for their illustrations.

5. Importance of the Field of Commercial Illustrating.—Drawings for advertising agencies and for photoengraving companies are prepared in the same manner, and are reproduced by the photoengraving process. The illustrator will often be called on for an original design. Considerable lettering is usually required and the artist is expected to supply what is lacking in a rough sketch made to show the general scheme. The work in most offices is specialized, and a man who is a good letterer may know very little about designing, and still be considered a most valuable employe. Another may be a figure artist and the assistance of other specialists will be required to complete his work. The all-around artist who can draw a figure, do good lettering, and make a design and a finished drawing ready for the photoengraver is in demand.

The artist can find no better field for a display of commercial originality than in an advertising agency. Here he may sometimes be given a certain amount of material from which to prepare a rough sketch showing his own idea. In another instance, the advertising man will have a definite plan or rough sketch, will suggest the most prominent display in the design, and will sometimes go into the detail of the style of certain lines of lettering.

6. The demand for commercial illustrations, such as are used in catalogs, booklets, and circulars, is constantly increasing. Illustrations appeal to the public and speak a language understood and appreciated by all. Whether the reproduction be the picture of a great master, or of a mechanical device, it will be seen, appreciated, and understood by a far greater number of people than would read even a portion of the unillustrated description of the same subject.

All business houses recognize the value of the illustrated catalog. Mail-order houses, which do a great business in the United States, would not think of offering their goods for sale without an illustrated catalog showing the listed articles.

The advertiser realizes the importance of illustrations, and will sometimes pay a large sum for a drawing that will bring out the idea and will occupy a very much smaller space than an adequate description. The modern automobile catalog, for careful detail and technical excellence in illustration, marks the highest point in dignity and elegance yet attained in the technical trade catalog. The highest grade of photographic work, retouching, and draftsmanship has been employed in the illustrations.

7. Diversity of Commercial Illustrations.—Material for illustration on almost every conceivable subject reaches the art rooms of the photoengraver and the advertising agency. All this miscellaneous work is given to specialists skilled in the preparation of drawings for the photoengraving process. Letterheads, billheads, trademarks, and seals are to be designed and finished drawings need to be made.

An illustrated catalog may be ordered. A dummy, already planned in a general way by the advertising man, shows the number of illustrations desired and an approximate amount of space that the finished engravings are to occupy. A cover page is also to be designed and hand lettering used instead of type. Perhaps an illustration of a device itself is desired on the cover.

The advertising man may suggest that the catalog would be improved by ornamenting the inside pages or perhaps by using drawn headings instead of type. Photographs of mechanical devices to appear throughout the booklet are to be treated in an artistic manner by the retouchers.

The half-tone illustrations of the catalog may be printed in a different ink from the type matter. To avoid a too mechanical effect, the photos may be blended or vignetted, so that the edges of half-tone illustrations may extend underneath the type matter.

8. The material for wash drawings of mechanical devices may be in the form of a blueprint or working drawing; or a machine may be so located that no good photographic view can be obtained, and the machine must be sketched. If a manufacturer wishes to forestall competition on a new style of machine his advertising matter may be illustrated by a wash drawing, made to represent a photographic effect in light and shade.

The agriculturist wishes to sell a farm, and a sketch or plan showing location and important details of buildings, orchards, etc. is furnished and a bird's-eye view made. Magazines and trade papers require many illustrations and men skilled in all classes of work are in demand to produce them. The vast number of catalogs produced each year furnish work for both designers and mechanical artists.

Great numbers of fashion drawings are made, mostly by firms who specialize in that line. Very little of this work, except the reproduction of the drawings, is done by the photoengraver. Sketches of posters are generally prepared by artists and the work is finished by lithography, which is a more economical method than photoengraving for large work of this kind. Illustrating medical publications demands careful, painstaking work.

9. Some mechanical devices cannot be clearly understood unless a transparent view, showing the interior, is made. In other cases, certain parts are broken away to show the interior construction. A large machine may have an attachment which is to be brought out conspicuously in the catalog illustration. The machine is subdued in color and the attachment strengthened, all of which requires the work of the artist. Guide books to summer resorts annually furnish considerable art work in ornamental arrangements, lettering, and retouching.

The artist acquires much valuable experience while searching in libraries, museums, etc. for the data required in the preparation of illustrations for encyclopedias and reference books.

Jewelry, silverware, and cut-glass illustrations for catalogs, booklets, and advertisements require retouching, as these articles seem more or less distorted by reflections. This defect is partly counteracted by dulling the surfaces of the objects, but the retouching is usually necessary to get good reproductions. This list could be extended almost indefinitely.

10. Requirements of Commercial Illustrator.—The trained commercial artist should be able to prepare his drawing in such a manner that it will have advertising value as well as artistic merit. The illustration that fails to attract and convince the public has no commercial worth. Hence, the artistic portion of a commercial illustration must not interfere with its strength as an advertisement. The space allowed for an advertisement picture, as a rule, affords the artist but a limited opportunity for the exercise of his ingenuity, and he must always remember which parts are to be made most prominent. If type matter is to be set, due allowance must be made. An artist can seldom draw in whatever medium, size, or proportion his inspiration suggests to him. The most successful artists in this line of work are those who can grasp the advertiser's viewpoint, usually a commercial one, and then draw the design accordingly.

THE HEAD ARTIST

11. The head of the art department is responsible to the firm for the quality and quantity of work produced by the men under him. He very often estimates the cost of making drawings and decides whether estimates can safely be given on certain drawings which may require considerable time in developing, or perhaps experimenting, before results are obtained. This class of work is done at a fixed hourly rate. The employes in an art department are usually engaged by the head artist, as he must decide whether the person in question is capable of filling the situation. The head artist usually instructs the men under him the various details of the work and sees that the customer is suited; he also informs them how much time can be spent on the work, to bring it within the estimated price. He suggests, when necessary, the style of treatment most suitable for the class of work desired. If an original design is required he usually explains his views to the artist and perhaps furnishes him with rough sketches, showing the main idea. This is not a hard-and-fast rule, as much depends on the artist who does the work.

A man with ideas is usually permitted to submit rough schemes to the head artist; if found suitable, a more finished design is shown to the customer. In successful designing, much depends on the ability of the artist who does the work to follow suggestions. A certain amount of material is required by some artists, to act as suggestions in the development of new ideas. Some designers are greatly helped by studying good specimens for a short time before beginning a new design.

12. The head artist is not supposed to be an expert in all the various branches of commercial art, but he has a broader view of the business and a better idea of the kind of drawing wanted for the purpose, and prevents the waste of time on impractical drawings. He must use considerable judgment at times in giving out work to the right man on the artists' staff, so that the result will be satisfactory and profitable.

THE ARTISTS' STAFF

13. The modern art department is a well-balanced organization of specialists. The artists may be classified under two heads; namely, *designers* and *mechanical men*. The designer originates and interprets ideas, and his work consists in making illustrations for books, magazine or booklet covers, and publicity drawings.

The mechanical artist prepares drawings from rough sketches, makes illustrations of goods for manufacturers' catalogs, retouches photographs, and does neat lettering and label work. An artist capable of all these things is seldom found. Some men are more facile with the pen than the brush, and each man is usually kept to his specialty and in the medium in which he is accustomed to work. Advertising agencies and photoengraving companies employ regularly artists who specialize in poster and fashion work in retouching, in mechanical drawing, in decorative work, in lettering, in landscapes, in figures, and in cartooning. The mediums used are pen and ink, charcoal, crayon, wash, water color, body color, or oils.

An artist should strive to be creative and to do original work. Frequently the advertising man or customer furnishes a rough sketch and the head artist decides how closely this material is to be followed. Very often the design furnished is very bad from both the advertising and the artistic point of view. The head artist usually specifies just how much latitude may be taken and still retain the main points of the customer's original idea.

14. Work By Outside or Free-Lance Artists.—The class of work usually given to men conversant with certain kinds of drawing, who have studios where their orders may be successfully executed from models or other data, may be figure work, lettering of a certain kind, or drawing of animals. When there is more work than can be done on the premises, outside artists are sent for. These men usually have offices and depend entirely on work they obtain from firms engaged in manufacturing, publishing, and other pursuits, as the demand in large cities for illustrations for commercial purposes is very great. An artist should be well trained in drawing before he attempts to become a free lance. Drawings are usually wanted quickly and the artist should be able to give a reasonable estimate of the time required and the cost of the work.

15. Apprentices.—The apprentices of the art department are obtained by taking on prospective artists who apply and exhibit specimens showing that they have a certain amount of talent which may be developed. Some young artists progress very rapidly, particularly those who continue to study art and find great pleasure in drawing. These beginners usually get their start from training courses in commercial art and very soon make drawings that can be reproduced and have a commercial value.

16. Experienced Artists.—Experienced men are very often difficult to get, as the field is not overcrowded with competent artists. The experienced artist usually has plenty of work, particularly if he can do several kinds of work. When a great deal of lithographic hand work was superseded by mechanical processes, many men drifted into photoengraving. Some artists prefer to work at home or in an office by themselves, where they are not restricted to regular hours and are supplied with work from engraving companies, publishers, and other sources.

Artists who have had a systematic and practical training are always in demand, as they can readily adapt themselves to the needs of the art department. While natural ability plays an important part in certain kinds of drawing, the painstaking, careful worker is very often more successful commercially. The art department demands neat and careful work, so that perfect reproductions can be made. The student who is not gifted with creative genius need not worry, as sufficient drawing must be done which requires only cleverness and adaptability. In an advertising-agency art room there is a great demand for well-trained artists to make neat and carefully executed drawings from instructions given. Original designers usually command good salaries, more particularly when their ideas can be readily applied to commercial use. Fig. 1 shows the artists' staff of a typical art department; the various specialists are engaged on their work, while the art director or head artist passes from one to the other, giving directions and advice.

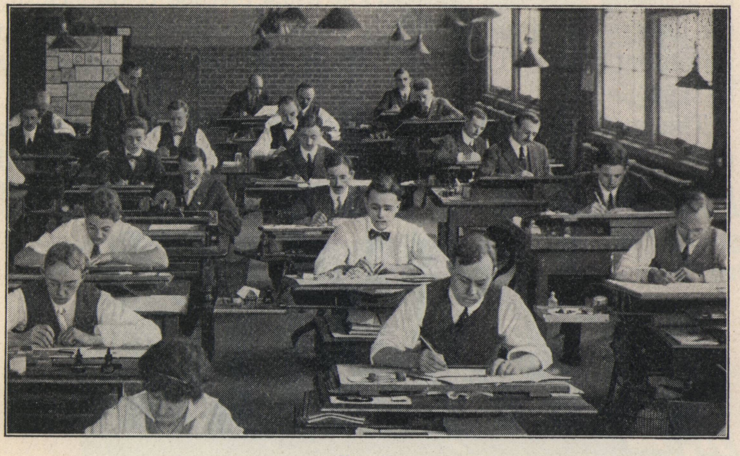


FIG. 1

LINE PROCESS OF REPRODUCTION

MAKING THE PLATE

17. Principle of Photoengraved Plate.—Drawings for commercial-art purposes must be duplicated so they can be issued in large quantities. The usual method of duplicating the illustration is to convert the drawing by some process into a printing plate. This plate can be printed in the same way as type.

The method most generally used for this purpose is the photoengraving process. An illustration of a photoengraved plate is given in Fig. 2, which shows a zinc plate, portions of the surface of which have been etched with acid, thus leaving the other parts standing in relief. To bring this zinc plate to the height of standard type, that the two may be used in conjunction, it is mounted with nails on a wooden block. Fig. 3 shows an impression made in printer's ink on paper with this

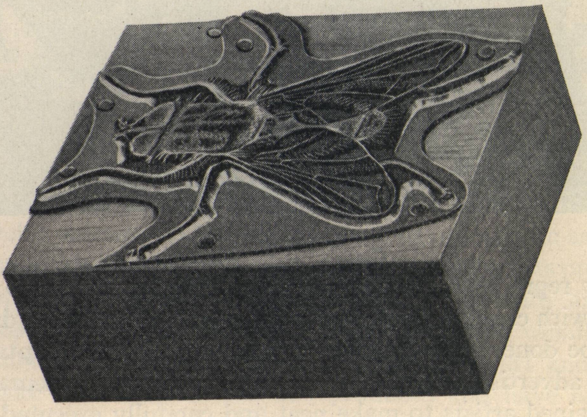


FIG. 2

same plate; in this impression, only the parts appear that, on the zinc plate, were in relief.

18. Classification of Reproductive Processes.—Three processes are used in reproducing drawings for relief plate printing: line engraving or zinc etching; halftone engraving, and wood engraving. Line and halftone engraving are classed together as photoengraving, or process engraving. Photoengraving is a process by which a design or image is, by means of photography, transferred to a metal plate, which is then etched, or cut away, by chemical and mechanical processes. Therefore, the general principle of cut making, briefly stated, is to put a design on a metal plate and to cut away by hand, by machinery or with acid, such portions of the plate as are not desired in printing the finished illustration.

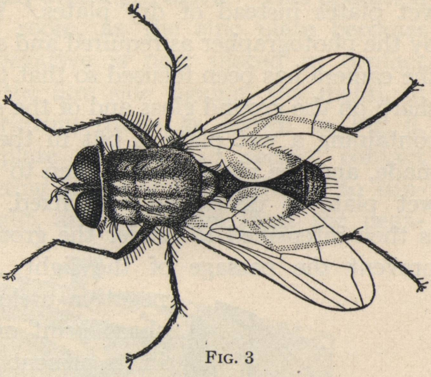


FIG. 3

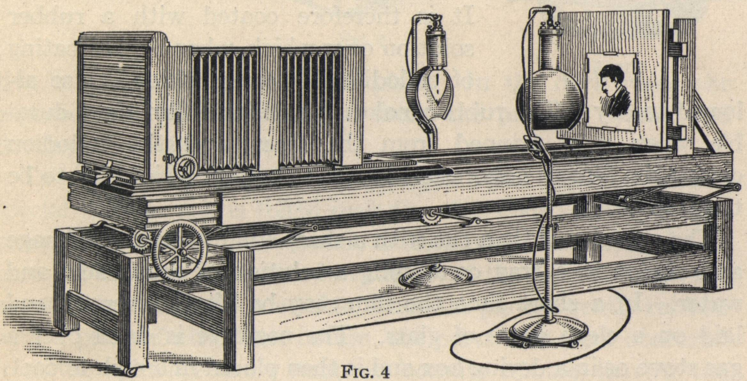


FIG. 4

19. Photographing the Drawing.—A completed drawing, on which the dimension of the required cut or block has been marked is given to the photographer, who makes from it a negative of the required size. The drawing is fastened to a board and placed in front of a camera, as shown in Fig. 4, which differs in principle from the ordinary camera only in the construction of the plate holder, which is made to accommodate wet plates instead of dry plates. Wet plates are sensitized by the photographer as required and are used while wet. After the camera has been focused so that the image of the subject is sharp on the ground glass and of the correct size, a plate holder containing a wet plate is put in the camera, the exposure is made, and the plate holder taken to the dark room, where the wet plate is developed and fixed. The resulting negative is then intensified to render the ground sufficiently opaque to prevent the passage of the light, which would render the negative useless for obtaining a clean, sharp print on metal. If the negative in its present state were printed on the metal, the illustration when printed on paper from the etched zinc plate would appear in reverse, right to left in position, so the negative must be turned. It is therefore coated with a rubber solution over which, when dry, a coating of collodion is flowed, which is also allowed to dry. The rubber makes the delicate film more durable when it is stripped from the glass, and the collodion causes the film to adhere to the clean glass on which it is to be transferred.

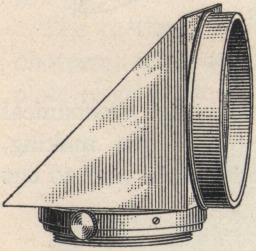


FIG. 5

The negative is then cut with a sharp knife around the image and placed in a tray containing a solution of acetic acid and water. In a short time the film may be lifted, reversed, and laid on a clean piece of glass, The negative is dried over a gas stove or in a drying box and is then placed in a rack to cool.

20. A device shown in Fig. 5, called a *prism* is sometimes used to secure the reversal of the image without stripping the negatives. The prism is attached to the mounting of the lens and is used extensively when subjects are to be an exact size, or when an accurate matching, or *register*, of plates is required, as in color work.

21. Printing Negative on Zinc Plate.—A piece of polished zinc plate is now carefully washed, coated with a sensitizing solution, and dried over a gas stove. This operation is conducted in the dark room, as the zinc plate becomes sensitive to light. The negative is now placed in contact with the sensitized zinc, the film side against the metal, in a strongly constructed printing frame, as shown in Fig. 6. The negative and zinc plate are held in perfect contact by the screw *a*. The printing frame is then exposed to sunlight or a powerful arc light, and an image from the negative is produced on the zinc plate. In the dark room the exposed zinc plate is removed from the printing frame and developed as follows:

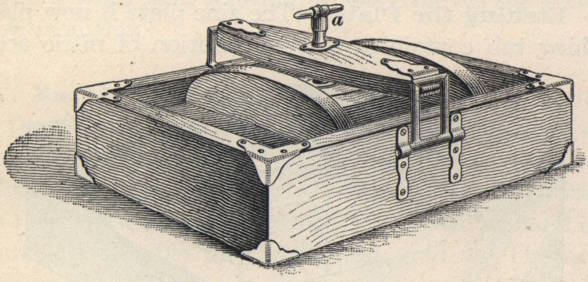


FIG. 6

To obtain the image, a composition roller charged with a special transfer ink is rolled over the zinc plate, which is then placed in a tray of clean water, or held under the tap. As all parts on the zinc plate that have received the light through the negative have become insoluble, when the plate is gently rubbed with a piece of absorbent cotton, the parts that were obscured from the light are easily removed because soluble, leaving the image clean and sharp on the zinc plate. After the plate is drained and dried by warming, it is prepared for the etching process. Large open spaces in the image and around the margins of the plate are painted over with an acid resist, such as asphaltum, which facilitates the etching by presenting the minimum amount of metal to the action of the acid and forms bearers for the support of the ink rollers in subsequent etching and proving.

22. Powdering the Plate.—The zinc plate is now sprinkled with powdered dragon's blood, the surplus being removed with a soft camel's hair brush. The dragon's blood adheres to the inked portion, which has remained sufficiently "tacky" to take the powder, and when this plate is heated the dragon's blood melts and combines with the ink and thus forms what is termed a "resist" for the acid. The back of the plate is also coated with asphaltum and allowed to cool; the plate is then ready for the first bite in the etching bath.

23. Etching the Plate.—The zinc plate is now placed in an etching tub containing a weak solution of nitric acid and water, where it is rocked gently, and in about 5 minutes the metal will be etched sufficiently to show lines in relief. The plate is then removed, dried, and warmed. The plate is too shallow for printing, but before another bite can be taken, the sides of the lines must be protected and the acid prevented from undercutting and causing breaks in the lines. Powdered dragon's blood is sprinkled on the plate and brushed from one edge with a soft, flat brush, so that it banks up against the lines, which are protected from the acid by the powder, which is then *burned in*. The process is then repeated from each edge of the plate in turn. The plate, now ready for the second

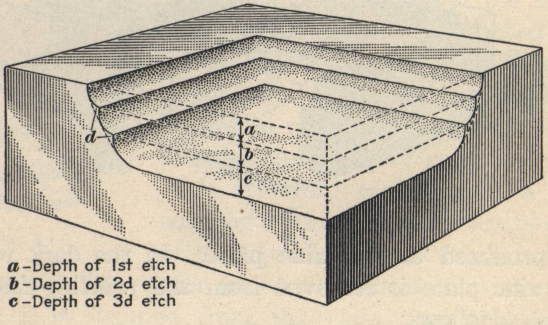


FIG. 7

bite, remains in the acid a little longer, is again removed, and the powdering and burning in are repeated, until the plate has received three etchings, which is usually sufficient to obtain the proper depth. After the etching is complete, all the coating is removed by scrubbing with lye. Fig. 7, a greatly enlarged view of a portion of a zinc etching, shows that the acid does not etch straight down, but forms a series of steps which, if unduly prominent, will make a shoulder that is likely to come in contact with the paper when printing. To reduce this shoulder, the plate is given one more etching, called the *finishing etch*. The plate is again *rolled up* with transfer ink, powdered, and burned in. Only the top surfaces of the lines in relief receive the ink and powder. The plate is then placed in a weak acid solution, which removes the shoulders *d* in a few moments.

24. Machine Etching.—Several types of etching machines are in the market, which are designed to supersede hand etching. For certain classes of work, such as coarse-screen halftones and open-line work, these machines are economical and satisfactory; but as their work cannot be as closely watched as hand etching, they are less suitable for the highest grades. The action of the acid on the plates is sometimes severe and liable to undercut the lines.

The Axel-Holstrom type of etching machine operates as follows: The acid is placed in a rectangular earthenware compartment and the plate to be etched stands almost vertically on a projecting shelf on one side of the compartment, but above the level of the acid. A paddle wheel in the same compartment is driven by a motor. When a plate is to be etched, the revolving paddle wheel carries the acid in an upward direction, so that it strikes a projecting shelf and is distributed in the form of coarse spray. The action of the acid on the plate quickens as the speed of the revolving paddle is increased. The acid spray combined with the oxygen from the air assists the etching and precipitates the oxide. After the first bite, the plate is removed from the compartment and washed. The powdering and burning-in process is proceeded with in the usual way. Some etchers find the use of this machine economical for certain stages of the work, but finish the etching by hand.

Another well-known etching machine is the Levy acid blast, which operates on a somewhat similar principle. The etching of the plate is accomplished with finely atomized acid, which is sprayed against the plate by compressed air and produces a deeply etched plate. The use of etching machines is far more healthful to the operator, as the acid vapor is conducted through a vent pipe to the open air instead of being allowed to escape into the room.

25. Finishing the Plate.—The plate, after being etched, is given to the pressman, who makes a few proofs to be used for reference by the engraver and router. A routing machine removes the blank metal from the larger open spaces, to insure greater depth and thus prevent these parts from coming in contact with the paper when printing. The plate to be routed is clamped to a bed and cutting tools of various sizes are attached to a spindle head, which is adjusted to move in any direction. The engraver then inspects the plate, carefully, and trims and cleans out any lines that have partly closed in, or shoulder left by the acid, and if desired will soften edges by cutting, or by using a tool called a *roulette*, which cuts the lines into very fine dots. The plate is then properly mounted by the pressman and proofs are struck off. The plate and proofs are now ready for delivery.

ELECTROTYPING

26. Electrotyping is not considered a part of the photoengraving process, but it has such an intimate connection that a brief description follows.

When duplicates of original engraved plates are required, either to preserve them from damage or wear, or to produce a number of printing plates exactly like the original, they are made by electrotyping. The surface of the photoengraved plate is thoroughly brushed over with graphite. This plate is then placed face downwards on warm beeswax and a uniform pressure applied; when removed an exact impression is left in the beeswax, but in reverse to the plate from which it was made. This wax impression now becomes a mold and all open places that are shallow and may cause difficulty by coming in contact with the paper in printing are built up with hot wax. Every portion of the mold must be thoroughly rubbed and polished with graphite or black lead, that the mold may be made conductive to electricity. The wax mold is then suspended by copper hooks in a tank containing a solution of sulphate of copper. Facing the mold and suspended in a similar manner is a sheet of copper. A dynamo generating a powerful current of electricity causes the atoms of copper to leave the sheet and deposits them on the wax mold. The thickness of this deposit depends on the length of time the current flows. When this shell of copper is of sufficient thickness it is removed from the wax mold, laid face downwards, and a thin sheet of tinfoil laid on it; the copper shell is heated and the tinfoil melts, the purpose being to prepare a surface to which the backing metal will attach itself when poured on. This backing metal is composed of lead, tin, and antimony. When cool, the electrotype is examined by a finisher, who levels the surface by hammering on the back of the electrotype, which is then shaved by a machine to the thickness of what printers call 11 points; that is about $\frac{1}{6}$ inch, and blocked on wood to the height of standard type.

STEREOTYPING

27. Stereotyping is a process by which line engravings or type forms may be duplicated to preserve the originals from damage or deterioration in printing. A thin sheet of composition made of paper and other ingredients is softened by soaking in water so that an engraving may be pressed thereon and leave an exact impression. The sheet of composition is laid on a hot plate while being impressed, which hardens the composition, so that when the original plate is removed a perfect mold or matrix is produced. The matrix is then placed in a specially constructed casting box and hot lead is poured into the box, making a casting of all lines and dots shown on the paper matrix. The lead plate is then removed and the back planed smooth and mounted on wood ready for the printer.

When making newspaper illustrations, all work is open, that is, the lines are far enough apart to stereotype well. While not as good as electrotyping, stereotyping is suitable for certain classes of work.

DESIGNING AND DRAWING COMMERCIAL ILLUSTRATIONS IN LINE

MATERIALS AND METHODS OF WORK

MATERIALS

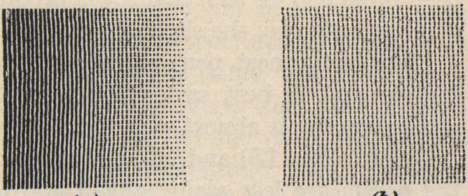
28. **Paper or Bristol Board.**—Pen drawings for reproduction are best made on bristol board or a good grade of white bond or unglazed photographic paper used by engravers and mounted on cardboard. Pen drawings made with black ink on tracing paper or cloth reproduce satisfactorily.

29. **Black Drawing Ink.**—The use of absolutely black ink is essential to satisfactory engraving. The ink should not be thinned, as good results are only obtained by clean black lines properly spaced. Waterproof India ink is the best to use for making line drawings for engraving purposes, as there is less liability of the line becoming brown by being rubbed in handling or blurred by bleaching if the drawing has been rendered over a silver print. This process will be described later.

30. **White Drawing Ink and Its Use.**—White ink is a pigment used by pen artists mainly to cross-line black lines with white ones in order to blend line shading into the white paper and thus avoid hard edges. The brand of white ink that has given the most universal satisfaction is Winsor & Newton's Flake White, purchased in cake form. It stays white longer and photographs whiter than other kinds. Some whites are

too gummy to use in a pen satisfactorily, or discolor easily. A cake may be put in a small dish and water added, and when the cake has become soft it may be mixed up well so that all lumps are dissolved and of the proper consistency to flow freely from the pen, and also have sufficient covering power.

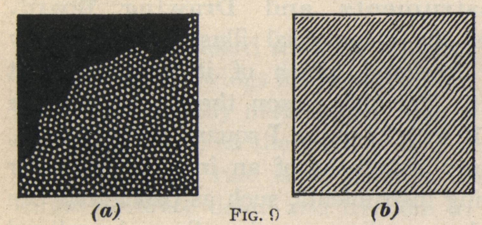
31. Fine black lines tend to print heavy at the extreme edges of a graduating tint. To help the graduating effect and produce a soft edge, the white-ink lines should be made tapering and spaced so that the first fine black line which is cut with white ink forms a tiny square and each succeeding black line that is cut with white ink gradually becomes longer, as the white-ink lines extend in the darker part of the tint, as shown in Fig. 8 (*a*). Flat tints composed of black lines may be lightened in tone and altered in texture by cross-lining with white-ink lines, as shown in Fig. 8 (*b*).


(*a*) FIG. 8 (*b*)

32. White ink is also used to get a stippled effect on a black ground, as shown in Fig. 9 (*a*). The white must be ground fine and be of the proper consistency, when mixed in the dish. It should cover well and not appear bluish in color on the drawing.

When preparing drawings of a mechanical nature, line tints intersecting outlines may be improved by passing a fine white line between the tinting and the outline, as shown in Fig. 9 (*b*).

Working with white ink requires more skill than with black ink, and its use should not be abused. White ink is employed sparingly and should not be depended on in making alterations. When a line extends beyond the point desired, or two lines are to be separated, white ink may be found useful.


(*a*) FIG. 9 (*b*)

33. Drawing Pens.—The most serviceable pens for freehand work for line drawings are Gillott's No. 290, which are very flexible and give a wide range of lines. When this pen has been broken in, so to speak, it will produce a beautiful line which may be varied by the slightest pressure.

Possibly the next pen in order is the crowquill, which is less flexible and is best suited for small lettering, though some artists employ it almost entirely.

Gillott's No. 170 and No. 303 are good pens for outlining, as the points are less easily spread and therefore a uniform line may be readily maintained. They are good for the coarser grade of lettering, such as is used on mechanical drawings. The life of these pens is short in comparison with the No. 290 and the crowquill. Other grades of coarse pens may be used for large drawings and for freehand tints of a special texture.

34. Parallel Rule.—A device for making tints composed of parallel lines, called a *parallel rule*, as shown in Fig. 10, will be found very serviceable. When a drawing is not tacked to the drawing board, and a tint is to be ruled, the parallel rule is more convenient to use than two triangles. The bar *a* may be set to a given line and the bar *b* held firmly, while the bar *a* may be moved gradually downwards at distances equal to the amount of space desired below the given line.

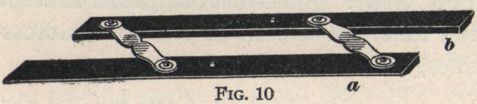


FIG. 10

35. Drawing Instruments and Drawing Board. Although the work of the commercial illustrator is purely pictorial, and largely freehand, much of it requires great accuracy in laying out. For this reason there are needed a drawing board (about 16 in.×22 in.), a **T** square, a 45° triangle, a scale rule divided into sixteenths of an inch, an irregular curve, and some drawing instruments, such as pencil and pen compass, a pair of dividers, a ruling pen, etc. Several small red or black sable brushes are also desirable to fill in solids. If such a supply of material is not already possessed by the student, he should secure them at once.

METHODS OF WORK

36. Relative Sizes of Original Drawing and Reproduction.—Drawings for reproduction are made to a larger scale than the finished plate. The artist finds this custom of decided advantage in the perfection of detail, and the photographer, when reducing the drawing, gives the work a more finished appearance by cleaning up the lines and little imperfections in tints. To reproduce high-grade work, drawings must be made necessarily to a larger scale, so that all imperfections may practically disappear in the reduction.

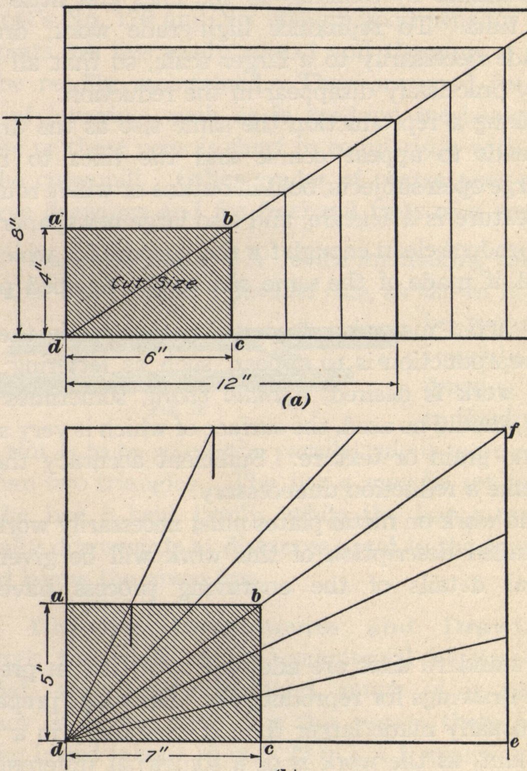
When making a reproduction the same size as the drawing, the work tends to appear coarse and the lines to become ragged. Large open subjects, bold in outline or where roughness of lines or texture is a feature, and also large newspaper drawings, will reproduce clean enough for the purpose for which they are intended, if made of the same size as the finished picture.

37. The artist may also do certain other work the same size as the reproduction is to appear, such as lettering; but if clean sharp work is desired, a *chalk board*, sometimes called *scratch board*, should be used, the surface of which is very smooth and shows no grain or texture. Sufficient accuracy therefore results to make a reduction unnecessary.

Artists who work on metal plates must necessarily work same size. A detailed description of this work will be given after the technical details of the engraving process have been explained.

38. No standard sizes are adopted by artists in preparing line or wash drawings for reproduction. Drawings prepared in studios are usually made larger than is customary in a photo-engraving plant, as the work is of a somewhat different character. A good rule is to make a drawing sufficiently large to get accurate detail and freedom to do the work properly. Drawings of most commercial subjects are large enough if prepared double the size of the finished engraving. For rather large open subjects, such as large, plain, hand-lettered catalog covers, ornamental arrangement for type pages, or for grouping photographs, one-third reduction is ample. It is not advisable to make a drawing larger than is necessary to get perfect detail and sufficient reduction for cleaning up in the process. It takes longer to go over a large surface, and in commercial work time and cost of production are generally considered important.

39. Laying Out Drawings for Various Scales of Reduction.—When a line drawing is to be made for reproduction, the height and width of the finished engraving should first be decided on. The drawing can then be made in correct proportion. A diagram, as shown in Fig. 11 (*a*), is most serviceable for this purpose. The tinted rectangle *a b c d*

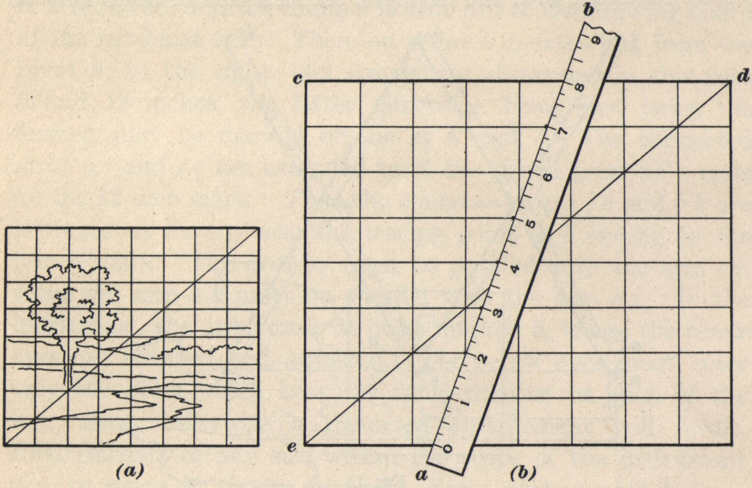


(*a*)

(*b*)

FIG. 11

indicates an engraving measuring 6 inches wide by 4 inches high. A diagonal line *d b* drawn across this tinted area and produced indefinitely is the next step. Any vertical and horizontal line intersecting on the diagonal line *d b e*, will produce a rectangle that will be in the same proportion as the tinted rectangle *a b c d*. If a drawing is to be made double the cut size, the height and width would each be made double, making the drawing 8 by 12 inches. The vertical and horizontal lines at these measurements intersect on the diagonal line *d b e*, and show that it is in correct proportion to the required cut. Only linear dimensions are considered in engraving; a drawing marked "reduce ½" will mean a cut one-half the height and one-half the width, and the resulting cut is only one-quarter of the area.



(a) (b)

FIG. 12

The foregoing diagram may be employed in finding other points at proportional distances as shown in (*b*), and will be found useful when copying a drawing to a large scale. A line drawn from the point *d* to a point along the boundary of the tinted area and produced until it intersects the outline of the larger rectangle, locates the point correctly. Other points may be located in a similar manner.

40. A series of cross-lines drawn on a piece of tracing paper and fastened over a picture to be copied is sometimes used, as shown at Fig. 12 (*a*), to facilitate sketching a subject to a larger or a smaller scale, or if the original is of no special value, the cross-lines may be drawn on it direct. The lines of the pictorial portion are then sketched in in the same relation to the large squares as they occupy to the small squares in (*a*).

To divide the rectangle on the larger drawing, view (*b*), into a number of equal spaces quickly, and to avoid stepping off these distances with the dividers, an inch rule or scale may be used. A number of equal divisions are found on the rule, the combined number measuring a greater distance than the space to be divided, and the scale is then adjusted at such an angle that these divisions will include the limits of the drawing, as indicated. After the vertical distances have been pointed off on the paper along the edge *a b*, lines parallel to *c d* may be drawn, and where these lines intersect a diagonal line drawn from *e* to *d* will locate all the horizontal divisions of the rectangle.

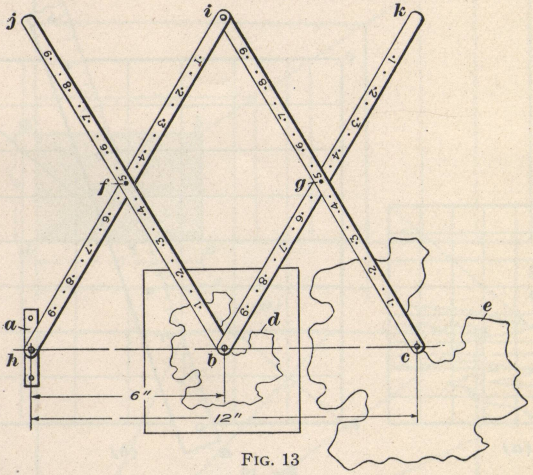


FIG. 13

41. The Pantograph.—A pantograph, shown in Fig. 13, is an instrument used in copying a drawing or photograph to a larger or smaller scale. The general working principle is very simple. The clamp *a* is fastened to a drawing board; a tracing point *b* is carefully moved around the outline of the picture to be copied and at the pencil point at *c* this same movement is transmitted and a line drawn on the paper, but to a larger or smaller scale. The main difficulty in the use of this instrument is in the adjustment of the arms to produce a drawing of specified scale. In Fig. 13, the necessary enlargement is assumed to be twice the size of the original, which is shown at *d* and the enlarged copy at *e*. In setting the instrument the two screw eyes *f* and *g*, which connect the arms where they cross, are first removed, and the clamp *a* is attached to the drawing board at the left-hand side. Then, on a line *h c*, extending from the pivot *h*, to the right, any convenient distances, in this case 6 and 12 inches, the latter dimension being just twice the former, may be marked off, as at *h* and *c*. The connected arms *h i* and *i c* are extended until the pencil point at *c* rests on the 12-inch mark. Then the connected arms *j b* and *b k* are arranged as shown, with the tracing point at *b* resting on the 6-inch mark. The arm *b j* must be parallel with the arm *c i*, while the arm *b k* must be parallel with the arm *h i*. In the illustration, the arms cross at holes marked 5, where the screw eyes are inserted and adjusted. The screw eyes must enter only the holes which bear the same number on each of the four arms, otherwise a distorted enlargement will result. Enlargements of any size within the scope of the instrument can be made in similar manner. Some instruments have a scale on the arms which shows at once where to place the screw eyes to obtain any desired enlargement. In any case, one arm of each pair of connected arms must be arranged parallel to one arm of the other connected pair, regardless of the size of the enlargement.

42. **Proportional Dividers.**—A proportional divider, shown in Fig. 14, will often be found useful and a time saver when copying a drawing to a larger or smaller size. The instrument may be adjusted by loosening the thumbscrew *a* which permits the piece *b* to slide in the slot *c*. On each side of the slot is shown a scale. The piece *b* is slid along until the

mark on it coincides with one of the marks on the graduated scale. The dividing points may now be set and the points opposite will measure a definite enlargement or reduction.

43. Proportioning Widths of Border Rules.—An advertising design is often to be bounded by a rule (that is, a line or band) of specified thickness, so as to connect it to printer's brass rule of standard dimension. The artist should therefore know the system of measurement used by printers and should be acquainted with the various sizes of rules most commonly used. The American printer uses the recognized standard of measurement for type, borders, and rules, which is known as the *point system*. Its basis is the *point*, which is approximately $\frac{1}{72}$ inch. In Fig. 15 (*a*) are shown brass-rule borders in sizes from 1- to 12-point thicknesses. The sizes of rules generally used are 1, 2, 3, 4, 6, and 12 points. If a sketch is marked to use a border that will match a 6-point rule, a border line on

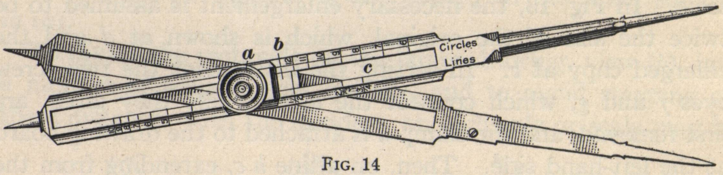
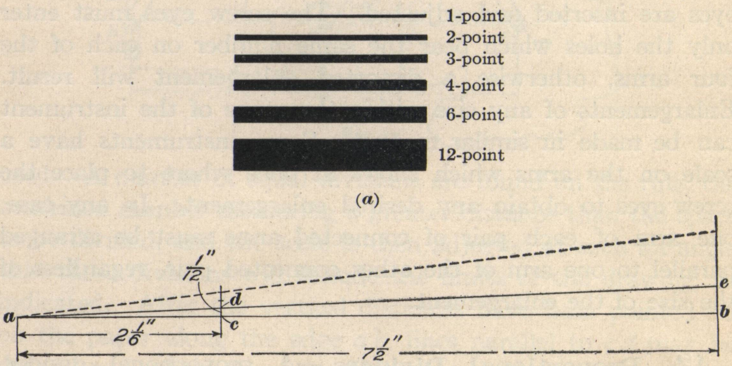


FIG. 14



(*a*)

(*b*)

FIG. 15

the drawing when reduced should measure $\frac{6}{72}$ or $\frac{1}{12}$ inch thick on the engraved plate.

The point system is used for measuring both the length and thickness of rules. For example, a standard newspaper column measures 156 points wide, or $2\frac{1}{6}$ inches. This measurement is specified in *picas*; 1 inch is divided into six parts, each part, known as a pica, being equivalent to 12 points. A newspaper column therefore measures 13 picas, or $13 \div 6 = 2\frac{1}{6}$ inches. When sketches are to have a border rule to match a pica rule, $\frac{1}{6}$ inch thickness is meant. When a sketch is marked in ems, it is understood to mean picas, as they are synonymous in this case, both being equivalent to $\frac{1}{6}$ inch. Specially divided scales, such as are used by printers, will be found useful to the artist engaged in advertising design work.

44. An accurate method is here given of laying out the thickness of a border, so that when reduced it will match a standard printer's rule. When a drawing is made either one-half larger or double the size the thickness is easily found; but when made to an odd dimension the thickness may be obtained by using a graphic method, which is the easiest way for the average artist. If a drawing is made $7\frac{1}{2}$ inches wide and is to be reduced to $2\frac{1}{6}$ inches wide, with a border that when reduced will match a rule $\frac{1}{12}$ inch in thickness, begin by drawing a line *a b*, $7\frac{1}{2}$ inches long, the actual width of the drawing, on a separate piece of paper, as shown in Fig. 15 (*b*). On this line set off, from *a*, a distance of $2\frac{1}{6}$ inches, locating the point *c*. From this point draw a vertical line of indefinite length and another from point *b*. With a small divider lay off on the vertical line from *c*, an amount equal to $\frac{1}{12}$ inch, thus locating the point *d*, through which a diagonal line is drawn from *a* and produced until it meets the vertical line *b* in point *e*. Then *b e* is the thickness the rule is to be made on the drawing. As the measurements are small, the diagram must be very accurately drawn to be of real service. Note that the diagram in Fig. 15 (*b*) is only one-half the size described.

When the accurate projection of lines from a thin rule is difficult, the thickness as shown may be doubled or trebled, and a dotted line may then be projected until it intersects the line *e b*, at which point the distance can then be subdivided and a more accurate measurement obtained.

45. Centrolinead.—When preparing large perspective drawings, the vanishing points often extend beyond the edges of the drawing board. To overcome this difficulty a device called a centrolinead may be purchased; directions for its use accompany each instrument. A simple home-made device will answer the purpose for most drawings and may be constructed from card-board as follows:

The vanishing points are first definitely located, either on the full-size drawing or proportionately on a smaller preliminary outline sketch. In Fig. 16 is shown a case where one of the vanishing points *v* is beyond the limits of the drawing board. After determining the distance of the vanishing point, an arc *a b c* is made, with a stick or by means of a string and pencil, on the edge of the drawing paper. A piece of card is then marked with the same curve and cut out as shown at *d*, the cardboard is then placed on the drawing so that the two curves coincide. Two or more pins *e* may be driven into the drawing board along the curved edge of the cardboard. The **T** square is placed along the horizon line, and the cardboard

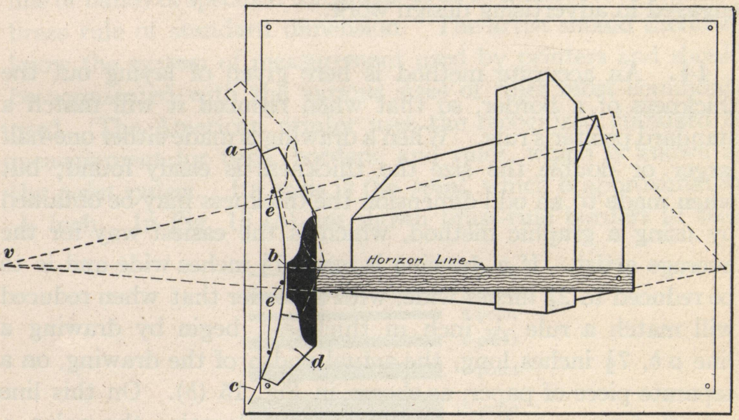


FIG. 16

attached to the head of the square, preferably on the under side, with thumb tacks. The **T** square may then be moved to the position required for any vanishing line converging at the point *v*.

46. Drawing and Proportioning Ellipses.—If an ellipse is to be put around a portrait or building, and the artist resorts to some approximate method that has to be coaxed and favored to perfect the shape, it is purely a waste of time. Art departments are generally equipped with a set of stock ovals made of celluloid or ebonite, which are usually a little large or too small for the particular drawing in progress. Approximate methods for making ellipses are all right for certain kinds of work and for ellipses of certain proportions; but one correct method that can be applied to any proportion of ellipse and that can be easily remembered, is as follows:

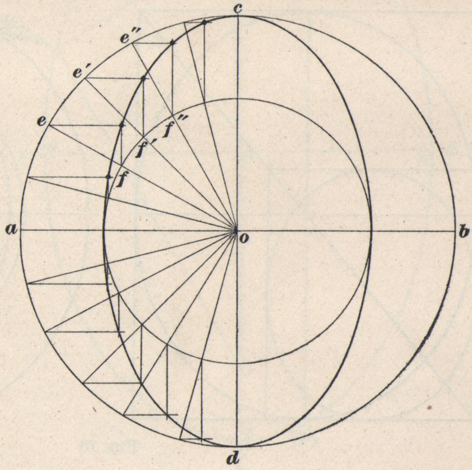


FIG. 17

Let it be assumed that it is desired to draw a correct form of ellipse $2\frac{3}{4}$ inches wide by $4\frac{1}{2}$ inches high. Draw an indefinite horizontal line *a b*, Fig. 17, and a vertical line *c d* at right angles to it. With the compasses set to one-half of the longest dimension of the required ellipse, $4\frac{1}{2} \div 2 = 2\frac{1}{4}$, with *o* as a center, describe a circle. Again set the compasses to one-half of the shortest dimension of the required ellipse, or $2\frac{3}{4} \div 2 = 1\frac{3}{8}$ and from *o* as a center describe another circle. Now from the point *o*, draw a radial line at random, crossing both concentric circles at *e* and *f*. From the point *e*, draw a line parallel to *a b* and a vertical line from *f* parallel to *c d*; the intersection of these two lines locates a point on the ellipse.

Any number of points may easily be located by drawing radial lines from *o* and from points *e′* and *e″* horizontal lines may be drawn and intersected with vertical lines *f′* and *f″*, as shown. An irregular curve may now be used to draw a smooth line through the points thus found. Only one-quarter of the ellipse need be constructed and the parts can be repeated by transferring with tracing paper.

The advantage of using this construction over an approximate method is that the exact curves can be determined at each point, so that when reduced it will fit an ellipse of similar proportion. For example, a portrait is to be inserted in an ornamental design, which contains an elliptic opening. A mat is to be cut out and placed over this portrait, and the elliptic opening is to be in the same proportion as that of the ornamental arrangement, so that when it is reduced there will be a perfect fit. The correct method is shown in Fig. 18 (*a*) and is based on the diagonal method previously described. The wrong method is shown in (*b*). Here the artist has taken the large-size ellipse from the ornamental arrangement and with a divider has set off equal distances inside to locate points to construct the smaller ellipse. The dotted oval shows the correct form of the smaller ellipse in proportion to the large ellipse.

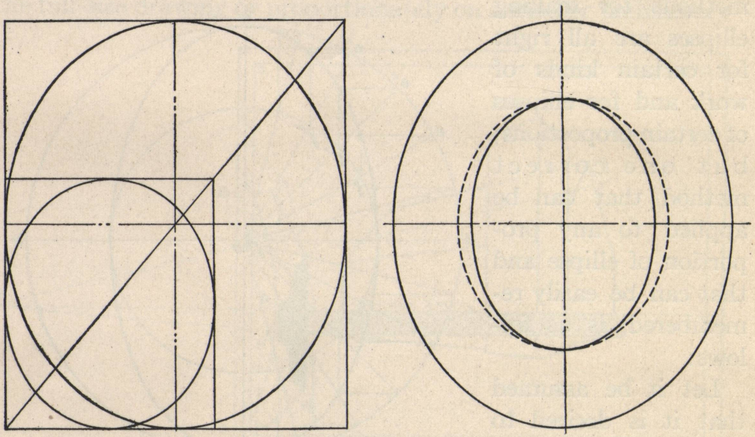

(*a*) (*b*)

FIG. 18

47. For very large sketches, such as billboards and show cards, another correct method of constructing an ellipse may be used to advantage. The ellipse is to measure 2 feet by 3 feet and may be drawn as follows:

Draw the vertical and horizontal center lines *a b* and *c d*, Fig. 19, in the usual manner and lay off from above and below the point *o* along the line *a b*, a distance of 1 foot 6 inches, or one-half the longer axis, locating points *e* and *f*, and from each side of the point *o* along the line *c d*, lay off distances of 1 foot, locating the points *g* and *h*. Now set the compasses to a distance equal to *o f* and from the point *g* describe arcs cutting the line *a b*, thus locating the points *i* and *j*, which are called the *foci* of the ellipse. Drive two pins in these foci and loop a piece of cord around them, as shown. Extend the loop of the cord from *j* to *f*, as shown by dotted lines. Place a pencil inside the loop and when moved around, as shown in the figure, a perfect ellipse will be described.

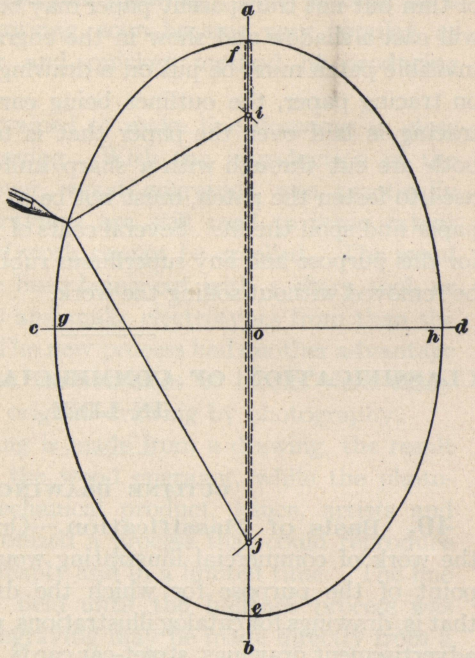


FIG. 19

48. Erasing and Patching.—When an erasure is made, no trace of the lines must show even faintly, otherwise a faulty plate will result. The surface must be carefully handled when erasing, so that when worked on no broken, ragged lines will be produced. If a good grade of bristol board is used, a circular rubber eraser which contains a certain amount of sand is as good as anything. Some artists are skilful in removing a thin shaving from the surface with a sharp knife, the blade of which is held nearly flat. Some remove only the top surface of the ink and finish with a medium hard rubber. If the alteration is extensive and the expense of redrawing is too great, a patch of thin but not transparent paper may be put on. Thick paper will cast a shadow and show in the engraved plate. When an invisible patch must be put on a drawing, the subject is copied on tracing paper, the outlines being carefully followed. This tracing is laid over the paper that is to form the patch and both are cut through with a sharp knife. Ordinary paste, if used to fasten the patch, must not be so thin as to expand the paper and spoil the fit. Several coats of rubber cement are best for this purpose and any superfluous rubber along the edges can be removed without soiling the work.

CLASSIFICATION OF COMMERCIAL ILLUSTRATIONS IN LINE

OUTLINE DRAWINGS

49. Basis of Classification.—One basis of classifying the work of commercial illustrating would be from the standpoint of the purpose for which the drawings are intended; that is, drawings for catalog illustrations, newspaper or magazine advertisement drawings, street-car cards, labels, posters, catalog and booklet covers, etc. These classes of work will be treated, and the method of making such commercial drawings will be discussed, but under a different classification. Inasmuch as the student, while being trained to do commercial illustrating, is being specifically trained to draw for process reproduction in line, the various classes of commercial illustrations in line will be discussed from the standpoint of the pen technique used, whether in outline, in mass, etc.

50. Characteristics of Outline Drawings.—By *line drawings*, in pen-and-ink work for reproduction, are meant those drawings made in pen-and-ink lines on white bristol board or paper. The work may range all the way from a drawing entirely in outline, to one that is very completely shaded.

51. The first kind of drawing prepared for the photoengraving process was the line drawing. This process, as a substitute for wood engraving, soon became very popular, as it furnished a cheaper and quicker method of producing engravings.

Artists at first were trained to make line drawings in close imitation of wood engraving. With the introduction of the half-tone process, however, wood engraving was practically superseded. Wood engravings are still used to some extent and for certain classes of work cannot be excelled. The wood engraving, owing to the lines being cut with a sharp tool, or graver, is easier to print and make electrotypes from than the photoengraved block. The new process had another advantage over wood engraving, as various sizes of blocks were easily produced from the same original drawing by photography.

When a wood engraving is made from a drawing, the result depends on the skill of the wood engraver, while the photoengraved block is a mechanical product, hence, artists and publishers willingly patronized a process that could reproduce a drawing in facsimile cheaply and in a limited time. The line drawing held the entire field until the halftone process was invented, by which an engraving may be made directly from a photograph, a wash drawing, or the object itself.

The advantages of the line drawing over the halftone are: ease and cheapness of reproduction; less difficulty in printing from the plate, which requires very little make ready, is easily electrotyped and stereotyped, and may be printed on a cheap grade of paper.

One of the most important things about the line-engraving process is that the most minute detail can be brought out clearly, if properly rendered by the artist in the original drawing. For technical subjects, where detail is very essential, the line drawing is superior to the halftone.

52. Requirements of Line Drawings for Reproduction.—To produce a good printing plate, the lines on a drawing should be spaced neither so wide as to appear too coarse and open, nor so fine as to fill in, when reduced. At first, a person should make his drawings double the size of the required plates, and so become accustomed to that scale of the technique, which is the one most commonly used.

Lines thicken slightly in reduction and gain a little more when the plate is printed, so that the spaces between diminish; hence, lines should be made clean, distinct, and with sufficient space between them to allow for reduction.

53. When making tints, relative values are to be kept distinct in color, as the lighter tones tend to darken in printing, and the black tones remain unchanged. A dark tint should not be rendered by placing fine lines close together, but by fewer and heavier lines placed far enough apart to reduce properly. Shadows so treated print clean and appear transparent, because of the amount of light exposed between the lines.

The amount of white paper in the form of a high light or between the lines is just as important in getting the effect as the rendering. A drawing may be reproduced, and the engraver's proof be all that could be desired; but if the artist has not taken into consideration the kind of paper on which it is to be printed, the result may be poor. The kind of paper on which a plate is printed determines the quality, character, method, or style, and scale of the technique. If the drawings for reproduction are to be printed on a poor grade of paper, economy of line and directness of method are the main things to consider.

When rendering a drawing for a large reduction of most subjects, the details may be simplified or suggested so that the general effect is retained in the reduction and a better printing plate is produced.

54. When preparing an outline drawing the artist should realize that a great deal can be expressed in a simple outline, which may be made of varying thicknesses, and so delicately graded as to suggest either form or texture. Each line should contribute to the final result and at the same time have a finished appearance as a whole. The lines should not be of a wiry character, which express neither feeling nor individuality. A careful study of the pencil outline should be made before inking; in fact, the pencil drawing should have the appearance of the finished drawing. This apparent waste of time is in reality a saving, because the inking can be more speedily done and the result is more certain if the pencil outline has the proper character.

55. Silver-Print Drawings.—A very serviceable and convenient type of drawing in outline made for line engraving is the silver-print drawing. A **silver print,** or *bleachout print,* is a photo print made on a dull-surface paper and worked upon by the artist. The material furnished may be a photograph or a mechanical device, and to save the artist time in sketching it to a desired scale, a negative is made of the proper size and a print produced on a dull, unglazed, silvered, photographic paper, which the artist mounts and then makes the pen-and-ink rendering directly over the photograph. After the main outlines are inked and parts that are indefinite or that require alteration are penciled in, the print is bleached by pouring over the surface of the drawing a saturated solution of bichloride of mercury, dissolved in alcohol. The surface of the photo print after bleaching becomes white and should be rinsed off

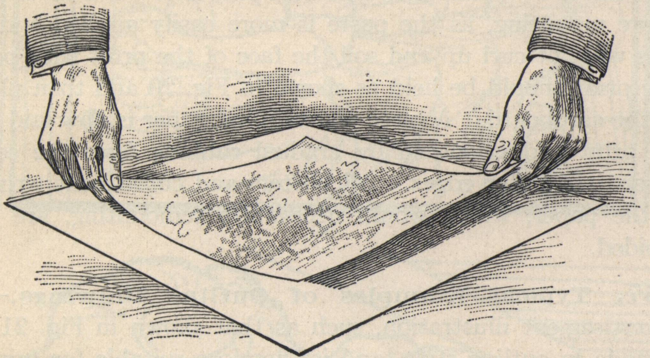


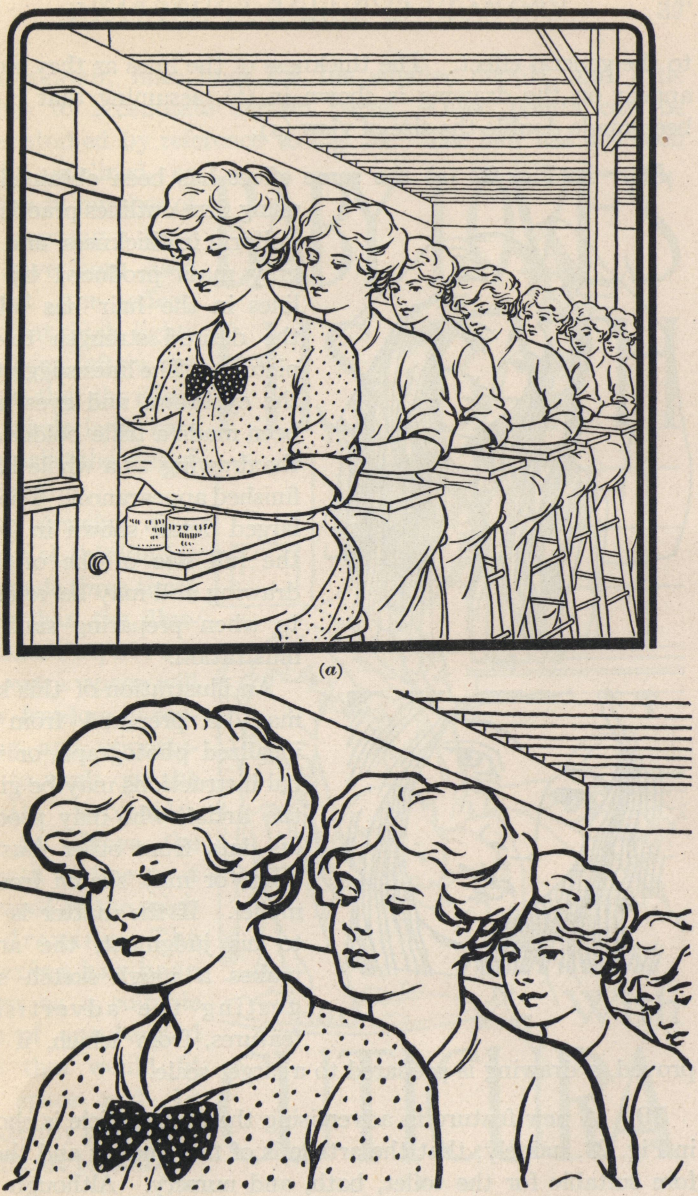
FIG. 20

with water to remove any particles of mercury and to keep it off the hands, as it is a poison. The ink lines will not be disturbed by the bleaching, if waterproof ink has been used. The print should now be thoroughly dried, but not in the sun, as the print will become yellow and the image will return faintly. This returned image can be removed, however, by bleaching it over again. These prints may be obtained from photoengravers or from firms who specialize in photographic prints.

56. When mounting a silver print, sufficient paste should be used to hold it securely to the cardboard, so that it will not be loosened in bleaching. The best plan is to wet a silver print before mounting, as the paste is more easily applied and the ends will not curl up and soil the face of the print with paste. The print should be held as shown in Fig. 20 and then placed on the cardboard. A piece of wrapping paper is now laid over the print and smoothed by gradual rubbing from the center toward the outer edges. All blisters and consequent wrinkles in the paper, which would necessitate remounting, are thus avoided.

57. Typical Examples of Outline Drawings.—An advertisement illustration, such as that shown in Fig. 21 (*a*), is made in outline style, and is therefore suitable for printing on a cheap grade of paper, all superfluous lines being omitted and the effect brought out by varying the thicknesses of the lines.

The illustration was intended to show that the article advertised was made in a clean and well-managed factory and that the employes were well treated and contented. To produce the proper pictorial effect, the artist carefully graded the thicknesses of the lines; for example, the figure in the immediate foreground has been boldly outlined and the other figures as they recede in the picture have finer outlines, which assists the perspective effect. To further emphasize the foreground, the clothing of the first figure has been stippled and a darker tone was added in the bow tie. A double border line around the picture strengthens the advertisement and contributes



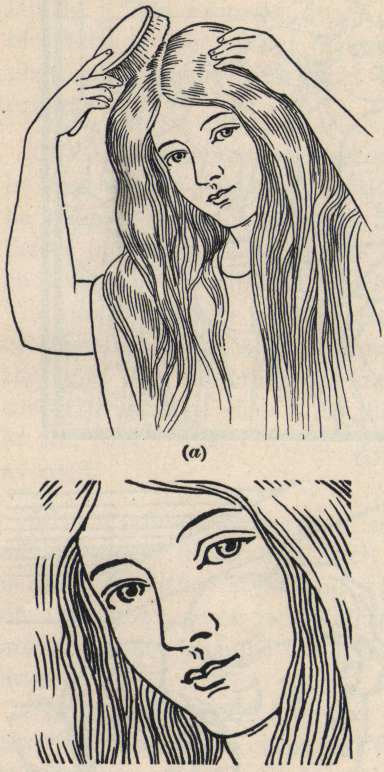
(*a*)

(*b*)

Fig. 21

to the general effect. The thickness of the lines as they would appear on the drawing is shown in (*b*), assuming that it has been made double the size of view (*a*).

58. In Fig. 22 (*a*) the same effect has been obtained by using firm outlines practically uniform in thickness, and the gray mass produced by the lines in the hair has added the desired strength to the picture. The lines suggesting the eyebrows and eyes have been made a trifle bolder and the drawing as a whole has a finished appearance. The enlarged detail shown in (*b*) is the full size of the original drawing and may be referred to when preparing such an illustration.


(*a*)
(*b*)
FIG. 22

An illustration of this kind may be prepared from an idealized photograph, or verbal instructions may be given the artist, who may procure his data from other illustrations, or may sketch from a model. If the matter is left to his judgment, the artist makes a rough sketch suggesting the advertising features, from which, if approved, a drawing is prepared to a larger scale.

59. A new feature in advertising the same article is shown in Fig. 23, namely, that the article is of fine quality and therefore suitable for the toilet, bath, and nursery. Although the lettering is prominent in comparison, the illustration shows well and tells the story. Heavy outlines are employed for the main contour, finer lines for the smaller details, and little touches to accentuate certain parts. These points can be better studied by reference to Fig. 24. The hair has not been heavily outlined, as a sufficient number of lines forming a gray tint have been used to get the effect. Sufficient high lights have been left in the hair, so that the effect as a whole is in harmony with the rest of the drawing.

The drawing of a subject of this kind is best made three times larger than the illustration required. The extra space will allow freedom in rendering and opportunity to work out the details properly. Fig. 24 shows the strength of line as it appeared on the original drawing. The lettering has been drawn as a suitable style of condensed type that would fit the space and be sufficiently prominent is difficult to find.

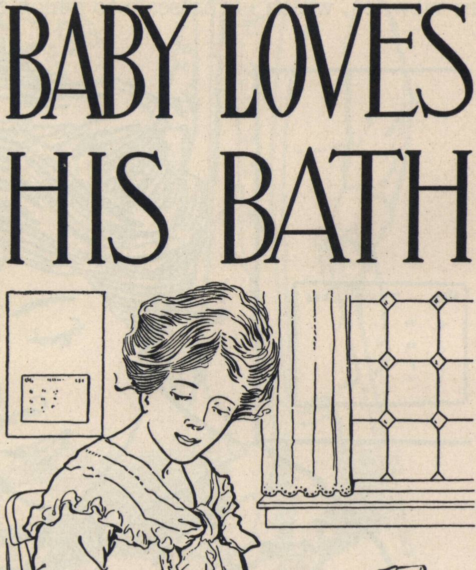


Fig. 23

60. Cartoons or drawings of a pictorially graphic style, may be treated in a variety of ways; but if an outline style of rendering is adopted, the main outlines should be made strong, and touches of black carefully placed to indicate shadows add strength. Reference to Fig. 25 (*a*) and to the full size detail in view (*b*), which is the scale to which the drawing was made, will give a better understanding of this principle. This example shows how a face treated with few lines may furnish good copy for the engraver. The line shading at the lower part in (*a*) connects the composition and gives variety.

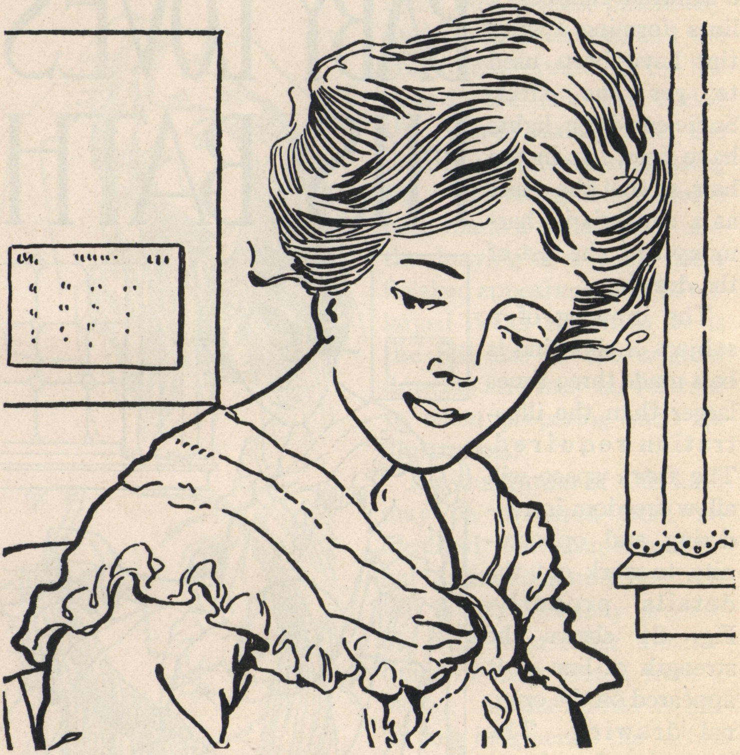
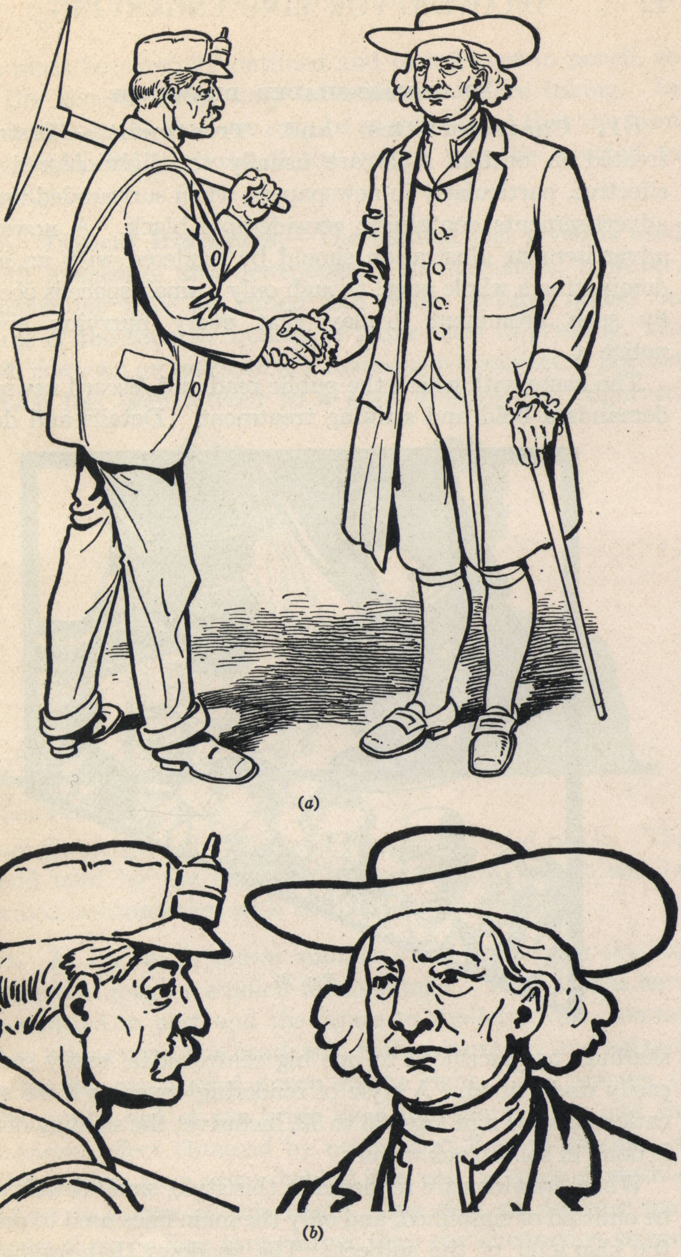


FIG. 24



(*a*)

(*b*)

Fig. 25

SOLID-MASS-SHADED DRAWINGS

61. Characteristics and Treatment.—Illustrations treated in outline style are usually too light-colored to be effective, particularly in newspapers, when surrounded by other advertisements containing considerable black. A newspaper-advertisement illustration should be rendered with an idea of dominating a whole page, though only a small space is occupied, by such prominent display that every hurrying eye will notice it.

The haste with which the public read and discard newspapers demands a bold and striking treatment. Details and delicate shadings are sacrificed to one big central idea, easily seen and easily understood. A style of rendering covering these specifications is shown in Figs. 26 to 32, inclusive; the shading of which is done in solid black masses.

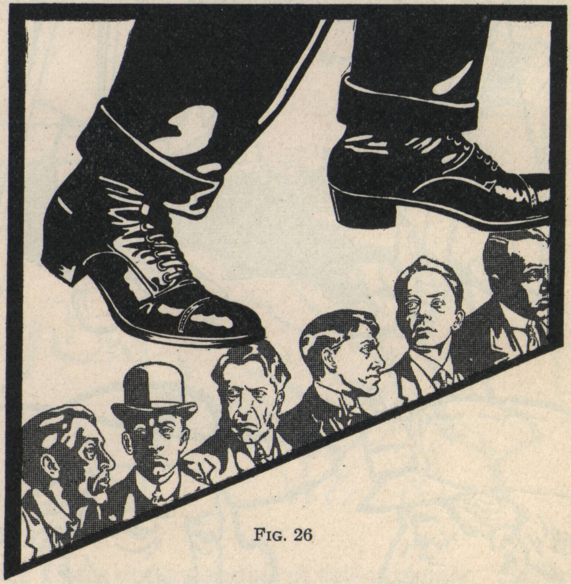
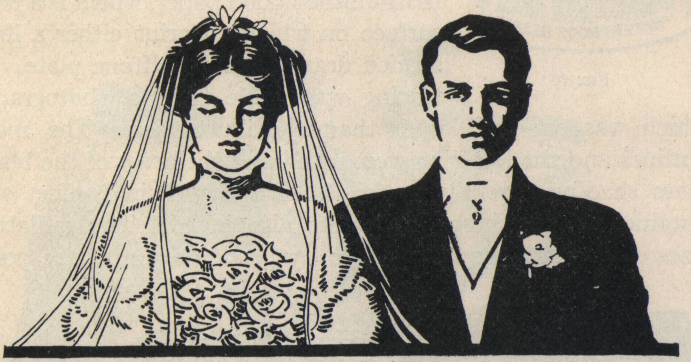


FIG. 26

When drawings are rendered in this style, small details should be omitted or simplified, and only the main lines used to preserve the character of the subject. The shadows that produce the effect must be carefully outlined and tinted over in pencil, so that the general effect may be observed before inking. In some instances the shadows may be so well placed that the form is suggested and portions of the outline may be omitted to advantage.

62. Typical Examples.—The method just given is used in both magazines and newspapers. In magazines, however, the technique may be varied and other textures added on account of the superior quality of paper used in printing. In Fig. 26 is shown an example of a mass-shaded subject, a portion of which has been altered to a gray tone by the engraver, though the original drawing was prepared in solid black. The method used by the engraver to get the gray effect will be described in connection with the halftone engraving.



By Permission of the Curtis Publishing Co.

FIG. 27

63. In Fig. 27 is shown another example of mass shading and one that may be studied to advantage. The outlines have been omitted in part and the figure to the left, while treated light in color except the head, is in perfect harmony and balance with the heavily shaded figure on the right. The manner of rendering the veil of the bride by a few simple lines and the transparent effect obtained by using short lines of shading on all those parts that occur behind the veil, is a good method to adopt in a case of this kind. This style of drawing may be made three or four times larger than the illustration shown, depending altogether on the manner in which the artist works or the standard adopted by the art department.

64. Mechanical subjects are difficult to render so as to produce an interesting picture. The illustration of an ink bottle shown in Fig. 28 is an example that was simple to treat in this manner, as the form was suggested by the outline itself and the nature of the subject demanded a solid black with brilliant high lights. The illustration is rendered so that when reproduced it will print on a hard-finished bond paper, which is a poor surface on which to print either a line-shaded drawing or a halftone plate. A tracing was made from a photograph, which was one-half larger than the illustration. The main outlines and the lettering were inked and the areas of the black mass shading carefully penciled until the desired effect was obtained, when these parts were also inked. The radiating lines on the stopper were put in by placing a pin at the point where the two outside lines converge and then using the pin as a guide for ruling the lines.

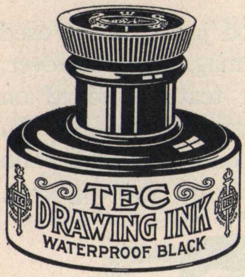


FIG. 28

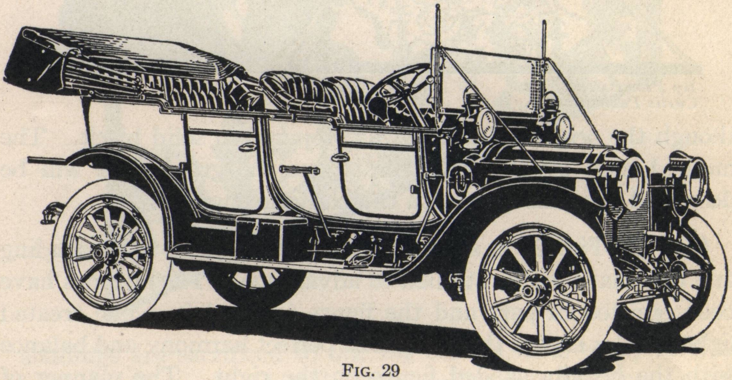


FIG. 29

The Packard No. 38 Phaeton

65. The automobile shown in Fig. 29 is more difficult to treat in this style on account of the great amount of detail which is to be massed. The whole has been made to appear as if it were strongly illuminated. The illustration shown has been made over a silver-print. It is a fine example of this style of treating a complicated mechanical subject. Such a drawing may be made three times larger than the illustration shown. The white lines that separate the black masses are best left white and white ink should be avoided. Brilliant high lights and definite cast shadows produce a more interesting mechanical illustration in a shorter time than if the natural gradations of the photograph were imitated to get the effect.

In Fig. 30 is shown another drawing for a page-head cut treated in this style. The heavy black masses have been confined to the clothing and the character of each face has been very cleverly suggested by small black shadows.

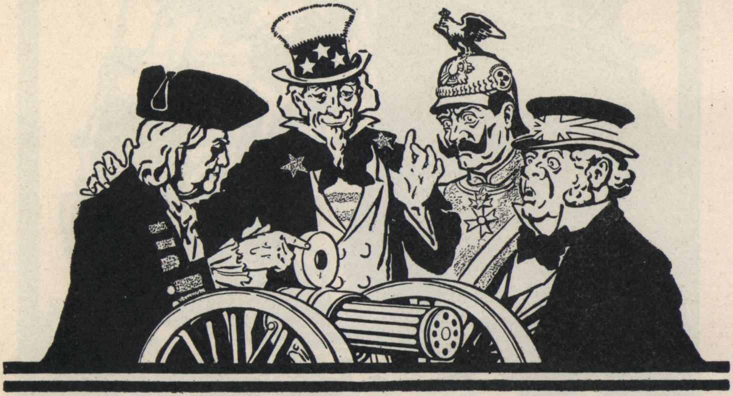


Fig. 30

By Permission of the Curtis Publishing Co.

When preparing such an illustration, small sketches may be made of each head on separate pieces of paper and used for reference, when the general composition has been determined, in preparing the large drawing. The costume or other details of the picture should be correct, even though only suggested in the design.

66. A publisher's advertising poster, rendered in a similar style, is shown in Fig. 31. Here the style has been somewhat modified, the black masses being softened by using short lines around the edges. The technique used on the books is also interesting and the illustration for study is valuable. On the large poster for which this original drawing was prepared, a color block, used as a background behind the figure, brought out the high lights and softened the harsh black masses. The white stippling used to break up somewhat the large areas of black, while interesting, has been of no special value.

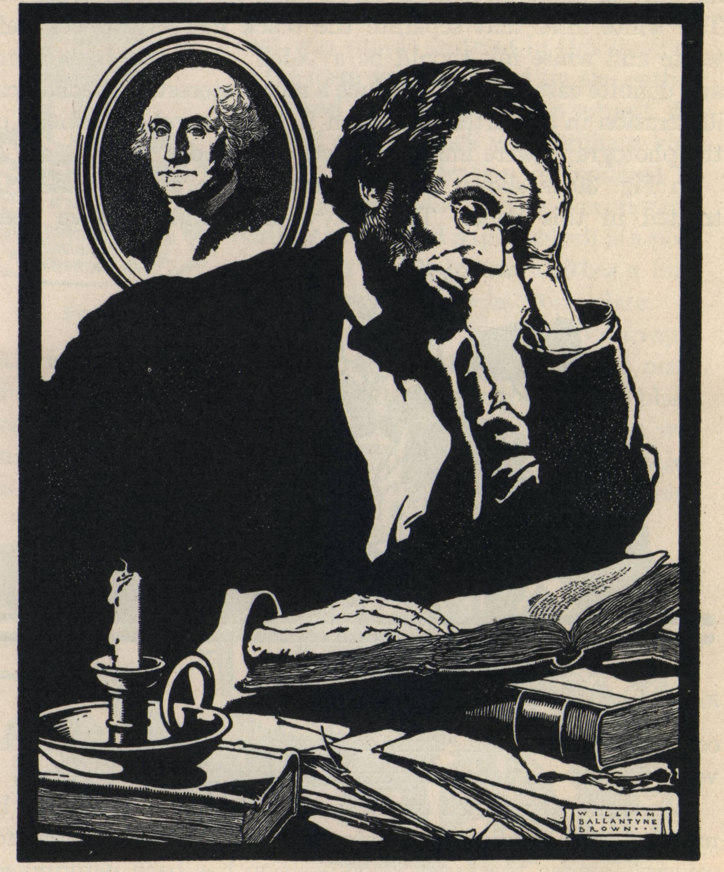
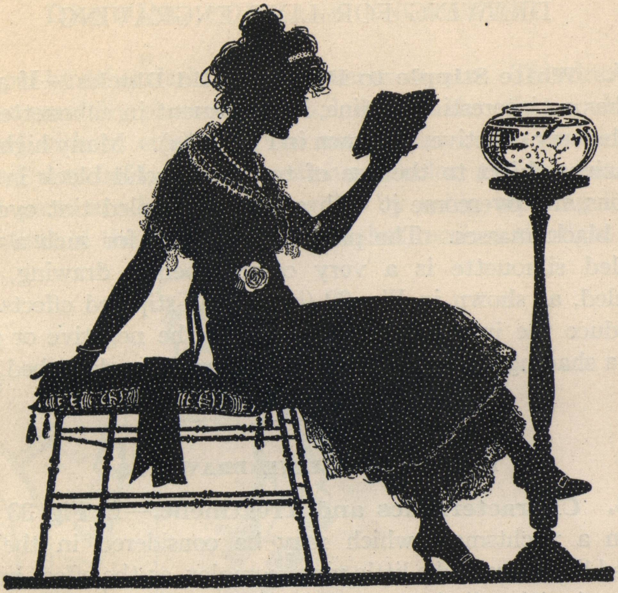
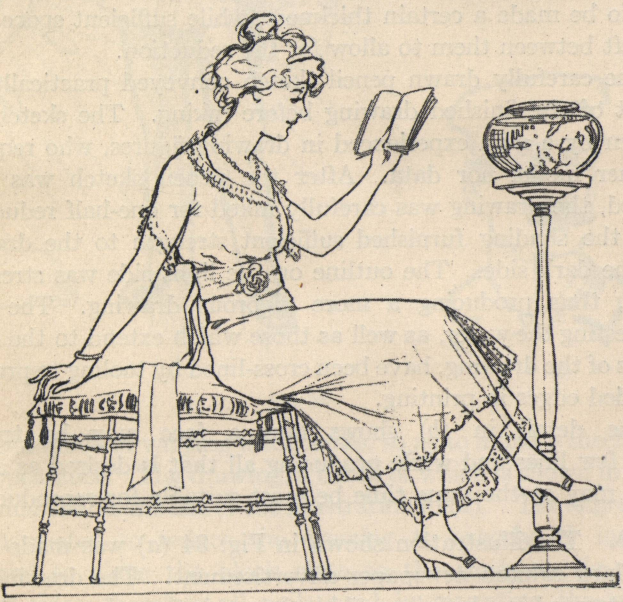


FIG. 31

By courtesy of "The Youth's Companion."



(*a*)



(*b*)

FIG. 32

67. White Stipple to Relieve Solid Blacks.—If a subject has an interesting outline, its treatment in silhouette style may be very effective, as shown in Fig. 32 (*a*). Many high-class magazines object to the use of too much solid black in illustrations and overcome it with a line or stippled tint over the solid black masses. The proper foundation for such a white stippled silhouette is a very careful pencil drawing, fully modeled, as shown in Fig. 32 (*b*). Some stippled effects used to reduce the intense black are put on the negative or plate, with a shading machine, details of which will be described later.

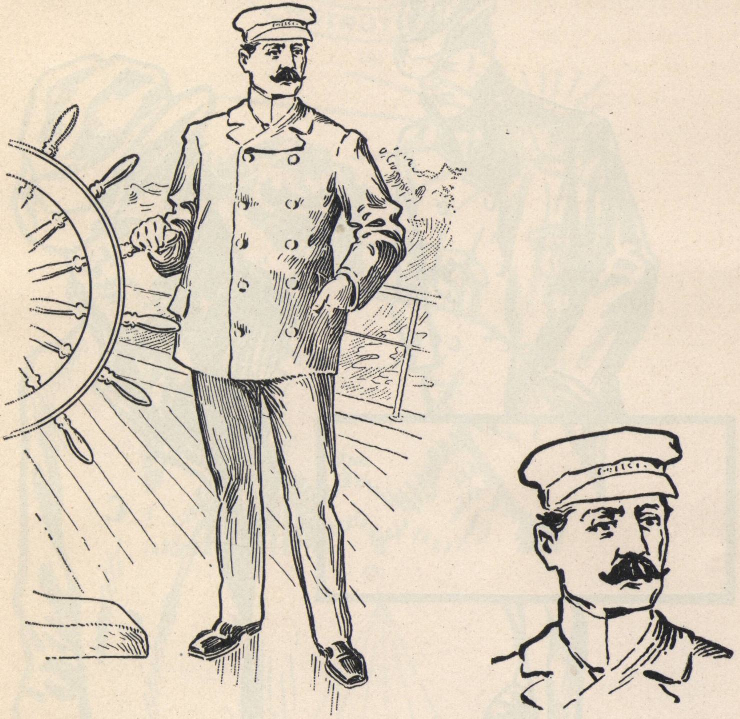
PART-SHADED LINE DRAWINGS

68. Characteristics and Treatment.—In Fig. 33 (*a*) is shown a yachtsman, which may be considered in the part shaded line class and a little more complex, as the effect is to be obtained with a limited amount of shading, the lines of which are to be made a certain thickness, while sufficient space is to be left between them to allow for the reduction.

The carefully drawn pencil sketch conveyed practically the effect of the finished drawing before inking. The sketch was drawn by a man experienced in drawing figures, who required neither model nor data. After the pencil sketch was completed, the drawing was carefully inked for one-half reduction, and the shading furnished sufficient strength to the drawing on the dark side. The outline on the light side was strengthened, thus producing a more vigorous drawing. The lines suggesting the water, as well as those which extend to the outer edges of the drawing, have been cross-lined by tooling to produce blended edges in printing.

The detail in (*b*) shows how a face may be treated with few lines and while producing all that is desired as a picture, may at the same time be most suitable for reproduction.

69. The illustration shown in Fig. 34 (*a*) was made for a standard column newspaper advertisement. The drawing has been treated in a heavier and blacker style than those previously described, which is desirable when the cut is to be surrounded in a paper by other dark-colored advertisements. This drawing was also carefully planned in pencil, so that the effect could be obtained without employing too many lines. The drawing is rendered very bold, both in outline and color, and the heavily shaded parts are blended into white by using tapering lines. The outline of the figure on the side that receives the light has also been made of varying thicknesses, so as to avoid a mechanical appearance. The drawing, a detail of which is shown in (*b*), was made double the size of the illustration in (*a*). The engraver was instructed to reduce the drawing to exactly $2\frac{1}{6}$ inches wide and to plane the block close to the work on the two vertical sides; therefore all nails used in mounting the plate on the wooden block were located inside this dimension. The



(*a*) (*b*)

FIG. 33

rectangular space was cut out on the plate to allow type to be inserted. The word *mortise* is used when giving instructions to engravers for cutting out such spaces.

The part-shaded type of drawing is somewhat difficult to render, as the effect is to be obtained by using a style of technique suggesting the surface or material, and with a limited number of lines of the proper weight to produce a certain tint value, and spaced to allow for the reduction.

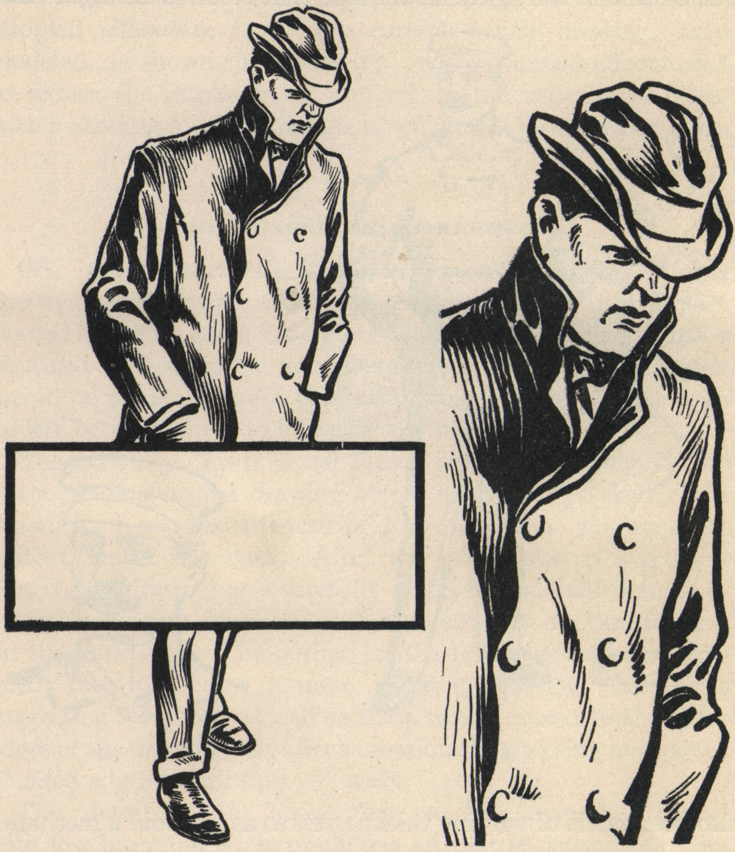

(*a*) (*b*)

FIG. 34

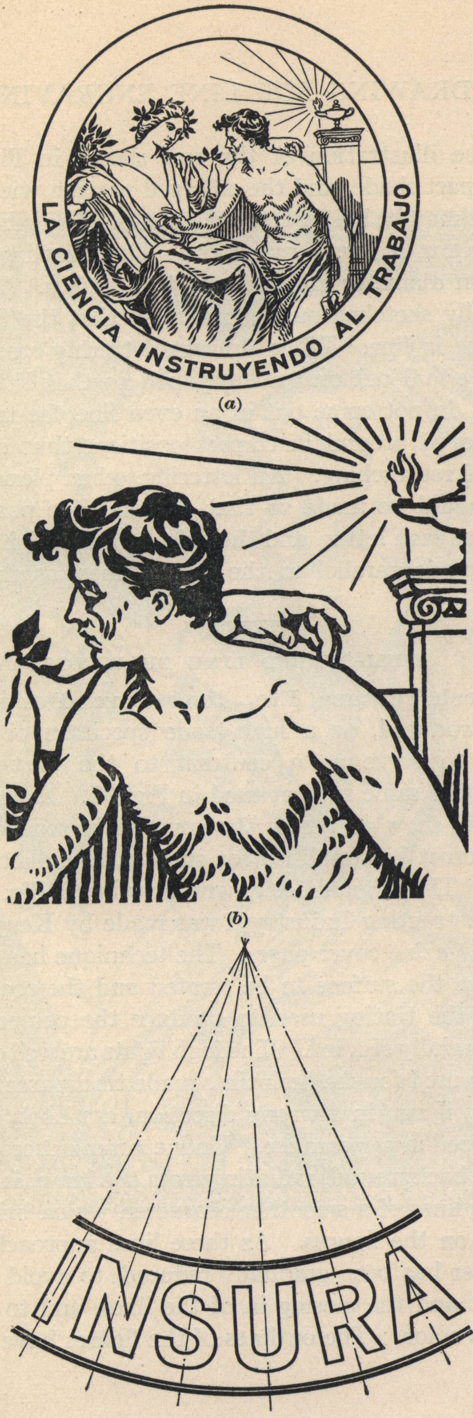

LA CIENCIA INSTRUYENDO AL TRABAJO
(a)
(b)
INSURA
(c)

FIG. 35

70. The illustration of the seal shown in Fig. 35 (*a*) is treated in part shade, and the enlarged portion, view (*b*), shows how details may be boldly treated and simplified when preparing a drawing for a large reduction. The drawing was made 7¼ inches in diameter and reduced to 2 inches. The lettering was carefully sketched out in pencil, so that the first and last letters came in line. When drawing lettering around a circle, it should be laid out on tracing paper, so that if the first and last letters do not come out in an even line the tracing paper may be moved around in correct position, thus avoiding the necessity of resketching. All lettering, when planned to go in a circle, should be made so that a radial line passes through the center of each letter, and the sides of all straight-line letters should be made parallel to the center lines, as shown in (*c*).

FULL-SHADED LINE DRAWINGS

71. Flesh Texture, Etc., for a Cover Design.—Fig. 36 is here introduced, as a high-grade specimen of full-shaded line work to serve as a contrast to the part-shaded line drawing of the same subject used in Fig. 35. A comparison of the two will show just how the completely rendered drawing of Fig. 36 must be simplified for such small-reduction work as in Fig. 35. The original design and drawing in Fig. 36, entitled "Science Instructing Industry," was made by Kenyon Cox for use on a magazine cover page. The technique has been varied according to the surface to be treated and the coarseness and fineness of the tinting used to produce the perspective effect has been carefully studied. The high lights are well defined, and the shading used for the flesh tints made transparent in quality. These lines, if run in a wrong direction, are likely to give the figures a wooden appearance. Undue prominence of the lines of the gray background, radiating from the lamp, is avoided by making the lines of a smoother character, which brings out the high lights on the figures. As these lines approach the lamp, their number has been gradually reduced, to avoid a dark and muddy tint and the closing in of the lines, and to maintain a tint even in color. The outlines of the figures have been made

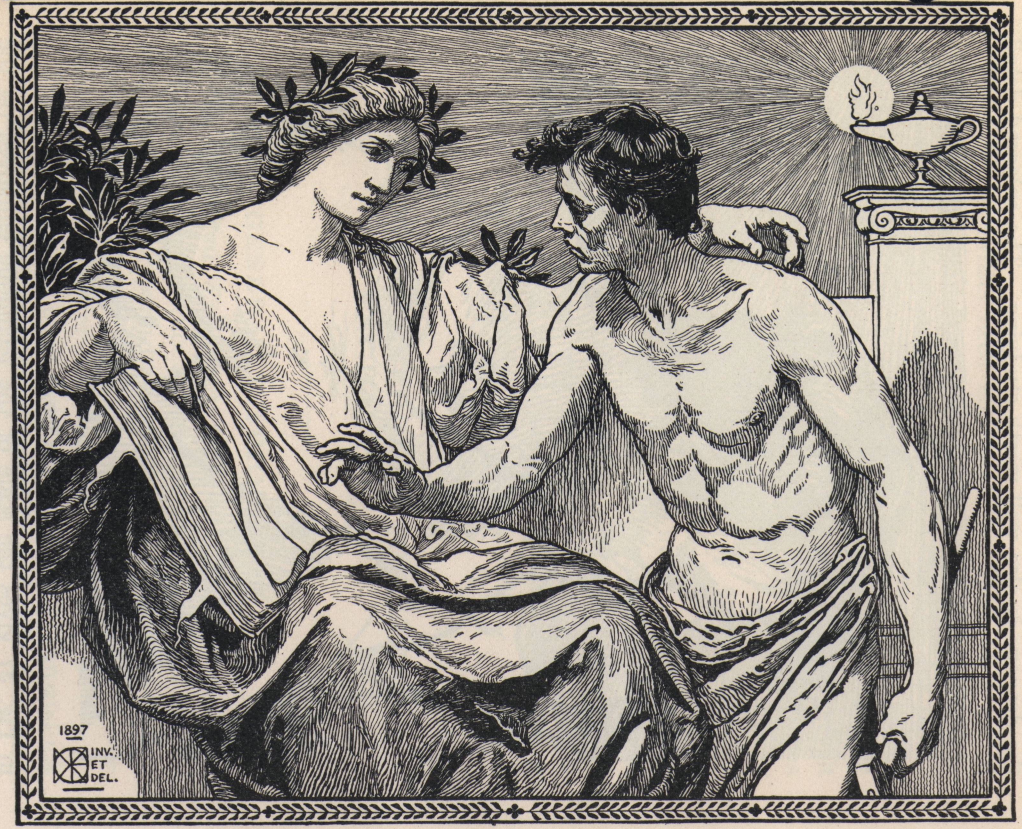


Fig. 36

heavier in parts to separate them from the various tints, thereby producing a more vigorous drawing. The technique used for the drapery is also well worth studying. The enlarged detail in Fig. 37 gives the scale of the technique employed on the original drawing.

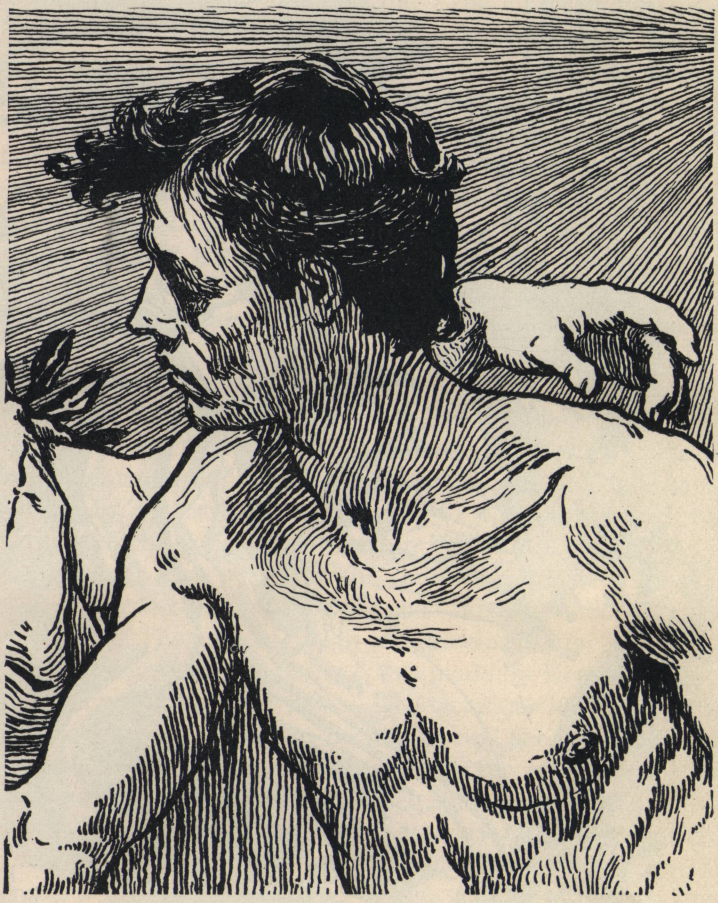


FIG. 37

72. Drawings of this character are carefully planned, and the figures sketched from life, and the masses of shade put in with pencil, after which the artist need only be concerned with style, direction, and spacing of the lines to suit the reduction.

73. Skilful artists need not carry the finish of a pencil sketch as far in detail as a beginner; but nevertheless an illustration, to be rendered in ink and in a style suitable for reproduction, should be carefully planned in pencil. When details are merely to be suggested, the pencil sketch should be well drawn so that all shadows are carefully defined, with the result that the attention is given to the inking alone which becomes a simple matter.

The examples shown in Figs. 36 and 37 are sufficient to illustrate typical specimens of full-shaded line drawings for commercial illustrations to be reproduced by the line-engraving process. As the student proceeds with the next Section devoted to special commercial line techniques, further examples of full-shaded line drawings will be illustrated and discussed, in connection with special techniques and methods of working as used in commercial studios and drafting rooms.

DRAWING EXERCISES FOR LINE ENGRAVING

GENERAL INFORMATION

74. Required Work.—As a test of his comprehension of the material, and as practice in technique and design, the student will be asked to prepare drawings in accordance with specific directions, some for preliminary practice and some to be submitted to the Schools for criticism and advice.

These drawings will be of three general kinds: Pen-and-ink drawings in line and mass to be copied from certain text illustrations as specified, which text illustrations have been arranged for the express purpose of teaching art-department or drafting-room technique; original renderings from photographs or actual objects and scenes, in which the general technique is used as employed in the first kind of work; original composition illustrations for advertising or mercantile purposes in which the requirements of both business and commercial-art technique are observed.

75. Preliminary Work (Not to Be Sent In).—Use a 10½″×16″ sheet of white paper vertically. Within a space 10½ inches wide by 8 inches high, lay out a diagram showing how to estimate the proportions and size of a drawing that is to be twice the size of the printed engraving or cut. Assume that the finished cut is to be 4 inches wide by 3 inches high, and use the method of projected diagonal, as shown in Fig. 11.

Within a similar space lay out pictorial diagrams showing how the leading lines of a small sketch may be enlarged proportionately to fit within a larger rectangle, using the system of horizontal cross-lines after the method shown in Fig. 12. Assume the small sketch or drawing to be 3 inches wide by 3 inches high, and divided into 12 squares each way (144 squares in all). Enlarge this small sketch so that it is to fit into a square 5 inches wide by 5 inches high. Use the method of tilted scale rule and diagonal, and after completing the cross-lines and enlarged sketch, draw lightly on the larger sketch, the position of the scale rule as it was placed when marking off the points for the horizontal lines.

Within the left-hand half of the upper half of another 10½″×16″ sheet, that is, within a space 5¼ inches wide by 8 inches high, lay out an ellipse geometrically, according to the method shown in Fig. 17. A compass sufficiently accurate for this work can be obtained at any stationery store for from 5 to 25 cents, though it will be to the student's advantage to possess an accurate set of drawing instruments. This ellipse may be constructed on the dimensions given in the text, 2¾ inches wide by 4½ inches high, or on any other selected dimensions that will fit well within the prescribed rectangle.

Within the right-hand half of the upper half of the sheet lay out an ellipse by the method shown in Fig. 19, using the pencil, string, and stationary pins. The same dimensions may be used as given for Fig. 19, if inches are substituted for feet as there specified, or the ellipse may be made the same size as the one described in the preceding paragraph, or even larger.

Within the lower half of the sheet draw a diagram showing how an enlarged ellipse may be laid out so that, when reduced to a specified size (say to serve as a border for a half-tone cut) it will be in exact proportion. Proceed as shown in Fig. 18 (*a*). Assuming that the final cut, that is the elliptic shape of the half-tone, is 4 inches high, make the larger ellipse (to represent the drawing) about 7½ or 8 inches high by the methods of ellipse drafting and enlargement previously described. Follow method shown in Fig. 18 (*a*), and avoid the method shown in (*b*).

As previously stated, the above work is for the student's preliminary practice only, and is NOT to be submitted to the Schools. The only drawings and renderings to be sent to the Schools are those for the three regular Plates described below.

76. Character of the Plates.—As in the case of previous subjects, drawings will be arranged in the form of drawing plates. While the drawings are to be made in pen-and-ink, the student will not be restricted to the use of any special paper. Linen ledger, or any similar bond paper coming in sheets 16 inches by 21 inches, is recommended. Each sheet should be cut in half, thus making two plates, each 10½ by 16 inches. This paper has a smooth, hard surface, very suitable for pen-and-ink work, and is sufficiently flexible to be rolled and mailed in a tube. Bristol board and illustrators' board are much used by professional workers, but, if used by the student, must be mailed flat. The student may doubtless have on hand, left from his work in previous subjects, sufficient paper to proceed with this work; if not he should purchase a supply at once.

PLATE 1-2

77, Exercises A, B, C, and D, Plate 1-2.—Within the upper half of the plate arranged vertically, lay out four squares each 2 inches on a side (or four rectangles each 3 inches wide by 2 inches high), separated by 1-inch spaces, and letter them A, B, C, and D, respectively. In rectangle A, draw vertical lines in black ink and, after they are dry, soften off part of them by white-ink lines drawn horizontally, after the method shown in Fig. 8 (*a*). In rectangle B, draw vertical black lines crossed by horizontal white lines to give a soft gray value, after the method shown in Fig. 8 (*b*). In rectangle C cover the entire ground with a wash of perfectly black ink, and allow to dry thoroughly. Then with white pigment or ink, applied with the point of the pen, cover part of the black surface with white dots, after the method shown in Fig. 9 (*a*). In rectangle D, cover the background with carefully drawn diagonal lines and surround it with an outline. Then, with white ink, draw a white line around the inside of the black outline, thus separating the tone or tint of the field from the black outline, after the method shown in Fig. 9 (*b*).

78. Exercise E, Plate 1-2.—Within the left-hand half of the lower half of the plate, that is, within a space 5½ inches wide by 8 inches high, make an exact copy of the outline drawing of the girls shown in Fig. 21 (*b*), making the scale exactly the same, and the lines of the same weight. If desired to fill the rectangle (allowing of course a ¼-inch white margin) more of the picture, as shown in (*a*), may be drawn, but the scale shown in (*b*) should be adhered to.

79. Exercise F, Plate 1-2.—Within the right-hand half of the lower half of the plate, prepare an original pen-and-ink drawing, from a photograph or from an actual group, and render it in the simplified outline method used for Exercise E. Whatever picture is drawn, first make a careful pencil drawing with sufficient shading to show modeling of flesh, costumes, etc., but simplify the pen drawing made over this pencil drawing to resemble the outline method used for Exercise E. Then erase the pencil work.

80. Final Work on Plate 1-2.—Write or letter on the back of the sheet the title, Plate 1-2: Drawing for Line Engraving (Part 1), class letters and number, name and address, etc., place the plate in a mailing tube and send it to the Schools for examination. Then proceed with the work on Plate 3-4.

PLATE 3-4

81. Exercise A, Plate 3-4.—In the upper, left-hand, $5\frac{1}{2}'' \times 8''$ rectangle of the plate arranged vertically, make an exact copy of the outline drawing shown in Fig. 24, making the lines exactly the same weight. If desired to fill more nearly the rectangle, draw more of the picture, as shown in Fig. 23; but maintain the scale of Fig. 24.

82. Exercise B, Plate 3-4.—In the upper right-hand, $5\frac{1}{2}'' \times 8''$ rectangle of the plate, make an original pen-and-ink drawing of a girl's head, a man's head, or of a child, from a photograph or direct from life. First draw it carefully and fully modelled in pencil, and then render it in accented pen outline, after the method shown in Fig. 24. Then erase the pencil work.

83. Exercise C, Plate 3-4—In the lower left-hand, $5\frac{1}{2}'' \times 8''$ rectangle of the plate, make a copy of the half-silhouette picture of the man on the right in Fig. 27. Enlarge this portion (showing the man) either freehand or by means of the system of squares, to two or three times the size of the cut in Fig. 27, so as to more nearly fill the prescribed rectangle.

84. Exercise D, Plate 3-4.—In the lower, right-hand, $5\frac{1}{2}'' \times 8''$ rectangle of the plate, make an original pen-and-ink drawing in the half-silhouette style used for Exercise C. Draw the head and shoulders of a man from a photograph or from life, and carefully model it in pencil. Then render it in pen and ink after the method used in Exercise C. Erase all pencil work.

85. Final Work on Plate 3-4.—Write or letter on the back of the sheet the title, Plate 3-4: Drawing for Line Engraving (Part 1), class letters and number, name and address, etc., place the plate in a mailing tube, and send it to the Schools for examination. Then proceed with the work on Plate 5-6.

PLATE 5-6

86. Original Design for an Advertisement Drawing.—Make an original advertisement illustration for a two-column line cut for an avertisement of Snow-White Washing Powder. The lettering of the name of the article is to be shown on the drawing. Among the subjects suggested are: a woman, cleanly and crisply gowned, washing clothes at a tub or wringer, the clothes showing as being pure white; a scene showing a stretch of snow-covered fields, with a well-filled laundry basket at bottom of picture, etc.

A column width is 13 ems, that is, $2\frac{1}{6}$ inches; therefore, two columns will be $4\frac{1}{3}$ inches wide. The cut must be slightly less, say 4 inches, or $4\frac{1}{8}$ inches, the height may be 5 or 6 inches. The original drawing should be laid out at least twice the size of these dimensions.

The proper technique of rendering must be decided on by the student, although that of Fig. 21 or Fig. 24, is suggested. When completed, the drawing (which will be at least 8 in.× 12 in. and will occupy the greater part of the $10\frac{1}{2}'' \times 16''$ sheet) should be marked "Reduce $\frac{1}{2}$," if that is the proper reduction.

87. Final Work on Plate 5-6.—Write or letter on the back of the sheet the title, Plate 5-6: Drawing for Line Engraving (Part 1), class letters and number, name and address, etc., place the plate in a mailing tube, and send it to the Schools for examination.

If any redrawn work on any of the plates of this Section has been called for and has not yet been completed, it should be satisfactorily finished at this time. After all required work on the plates of this Section has been completed, take up the work of the next Section, which is a continuation of the training in commercial illustrating.

SUPPLIES FOR STUDENTS

Our students need paper on which to write lessons; many of them need drawing outfits, chemistry outfits, chemical and other supplies that are not included with their Courses. Many inquiries therefore arise as to the kind of supplies to purchase and where to get them.

It is desirable that the members of our Organization confine their attention wholly to educational service, and arrangements have accordingly been made with the Technical Supply Company, Scranton, Pa., to furnish our students with supplies suitable for doing the work of their Courses. The offers of that Company will therefore reach you, in the effort to help you get whatever you need.

INTERNATIONAL CORRESPONDENCE SCHOOLS

LIGHT-WEIGHT PRINTED ANSWER PAPER

With printed headings especially adapted for use of students of the I.C.S. Size 8½″ × 14″. This paper is very tough, durable, and has a fine writing surface. It will last for years, and the student is thus enabled to keep a permanent record of the work sent to the Schools.

I.C.S. COLD-PRESSED DRAWING PAPER

Size 15″ × 20″. Buff color—easy on the eyes. It is unusually strong and tough; takes a clean, clear line; is not brittle; is not easily soiled. Best for both ink and pencil.

"TESCO" TRACING CLOTH

Used extensively by draftsmen, architects, engineers, and contractors—a high recommendation of quality. It is transparent, strong, free from knots and other imperfections and contains no air bubbles. I.C.S. instructors assure their students it is thoroughly dependable. Furnished in sheets 15″ × 20″.

PORTFOLIOS

For keeping your Examination Papers and drawing plates neat and clean and in order. Don't roll them up and then forget where they are, or leave them where they will become soiled or damaged. Some of these days an employer may ask to see them.

"TESCO" LIQUID DRAWING INK

"Tesco" Ink flows smoothly and evenly from the pen and leaves a clear, sharp line of uniform intensity, free from cracks and bubbles.

FOUNTAIN PENS

As answers to Examination Questions must be written in ink, you can, with a fountain pen, answer your papers any time—anywhere—whether it is in the office, shop, factory, or home.

DICTIONARIES

No matter which Course you are studying, no matter what kind of work you do, a dictionary is valuable. Keep it near you when you read and when you study. Don't skip the words you don't understand; look them up, for that is the best way to acquire a vocabulary.

RUBBER HAND STAMPS

Stamp your name, address, and class letters and number on every lesson and drawing you send to the Schools. Useful for marking envelopes, books, papers, etc.

DRAWING OUTFITS

The I.C.S. Outfits are not simply "gotten up" to provide something for the student to use during his Course. These Outfits will last long after he has gotten into actual work. They are practical Outfits—made up from specifications furnished by I.C.S. Instructors.

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